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**EDWARD J. RYAN, B.S., D.D.S., Editor**

**ETHEL H. DAVIS, A.B., Assistant Editor**  
708 Church Street, Evanston, Illinois

B. F. SAPIENZA received his D.D.S. in 1920 at the University of Buffalo. He has previously written on the subject of restoration for functional balance and his practice stresses restorative dentistry. Two more clinically practical articles by Doctor Sapienza are scheduled for early publication in THE DIGEST.

ERWIN S. ULSAVER, D.D.S. (University of Michigan, 1901), ARTHUR F. HEYL, M.D. (University of Michigan, 1923), and AUGUST L. BECK, M.D. (New York University and Bellevue Medical College) collaborated as Prosthodontist, General Physician, and Otolaryngologist respectively in the diagnosis and treatment of the case presented in the report of the RELIEF OF FACIAL PAIN BY PROSTHETIC CORRECTION. GEORGE WOOD CLAPP, D.D.S. organized the material for publication. This article represents the practical application of treatment in the abnormal temporomandibular joint condition described in detail in Doctor Kallenbach's series concluded in this issue.

## About Our CONTRIBUTORS

PERLEY J. LESSARD, D.D.S. is a graduate of the Baltimore College of Dental Surgery Dental School, University of Maryland (1921). As a general practitioner interested in prosthetics and the possibilities suggested by acrylics, he offers a NEW COMBINATION REMOVABLE BRIDGE.

J. BARDIN GOODMAN has his D.D.S. from the New York University College of Dentistry, class of 1929. Doctor Goodman is a general practitioner and presents an article on the use of hydrocolloid impressions for indirect inlays which all general practitioners will want to try at the first opportunity.

JOSEF NOVITZKY, D.D.S. (University of California College of Dentistry) last year completed fifty years of time spent in a dental office, although not always as a dentist, having begun as an office boy in a dental office in San Francisco. Four years' surgical experience at Lane Hospital, San Francisco in Stanley Stillman's service and three years in the Division of Surgical Pathology of the Medical Department of Leland Stanford University contributed to a well-grounded medical and dental knowledge on which Doctor Novitzky has drawn in writing his numerous contributions to the medical and dental journals. He practices general dentistry and oral surgery.

TRAVIS E. KALLENBACH, D.D.S. (Chicago College of Dental Surgery, 1926) presents the fourth and final installment of FACTORS IN CORRECTING JAW POSITION RELATIVE TO THE ABNORMAL TEMPOROMANDIBULAR JOINT which was begun last February.

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# Direct Method of Constructing a Full-Cast Crown As a Bridge Abutment

B. F. SAPIENZA, D.D.S., Birmingham, Alabama

THE GREATEST ASSET of the old-fashioned shell crown was longevity. Its greatest fault was that it lacked sanitation. It is my contention that the two chief reasons for the long life of the old type bridge were: (1) the universal use of gold crowns as bridge abutments—these crowns afforded a protection from caries to all surfaces of the tooth and usually remained in position until affected seriously by periodontal disturbances—and (2) the absence of strain on the abutment teeth when the completed bridge was cemented into position—there was nothing to disturb the normal resting position of the roots.

## DIGEST

A direct method (eliminating the need for an amalgam die) is described for the construction of a full-cast crown as a bridge abutment. The advantage of maximum longevity of the old type gold crown is incorporated in the advantage of the modern full-cast crown with the elimination of its usual fault, frictional resistance and resultant strain.

This absence of strain was due to the particular design of the gold crown which, when properly constructed, fitted only at the gingival, leaving spaces between the prepared tooth and the inner surface of the crown to be taken up by cement.

When an attempt is made to seat the average modern bridge into position, the operator usually encounters resistance through some interference. This interference creates strain and immediately causes a disturbance of the normal resting position of the roots. This strain is due to our present-day ability to make castings fit accurately and our frequent inability to make castings go to their exact places after adding the pontic and soldering the parts of the bridge together. It is my opinion that this is one of the chief reasons for failure in fixed bridge restorations.

Inasmuch as the full-cast crown is the latest development in the gold crown and inasmuch as maximum longevity was evident when the old type gold crown was used, it is reasonable to assume that the most successful bridge possible when esthetics may be ignored would be one constructed with full-cast crowns used as bridge abutments in which is eliminated the amount of frictional resistance that causes strain. Thus, if we can eliminate strain, the chief fault of modern cast crowns when used as bridge abutments, we then have the finest type of bridge restoration for that part of the mouth in which esthetics is not involved. This can be done, according to the technique I have been using for approximately twenty years.

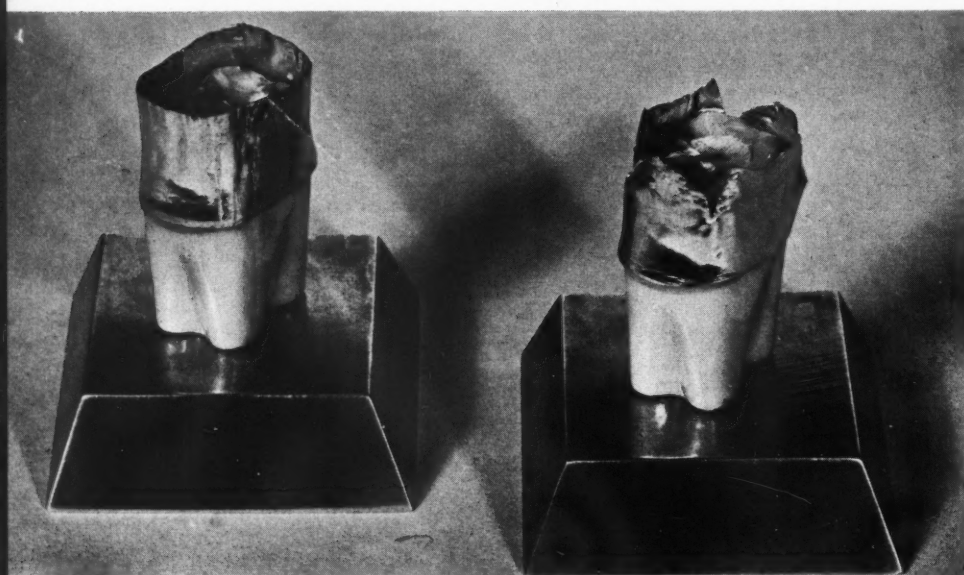


Fig. 1  
Fig. 2

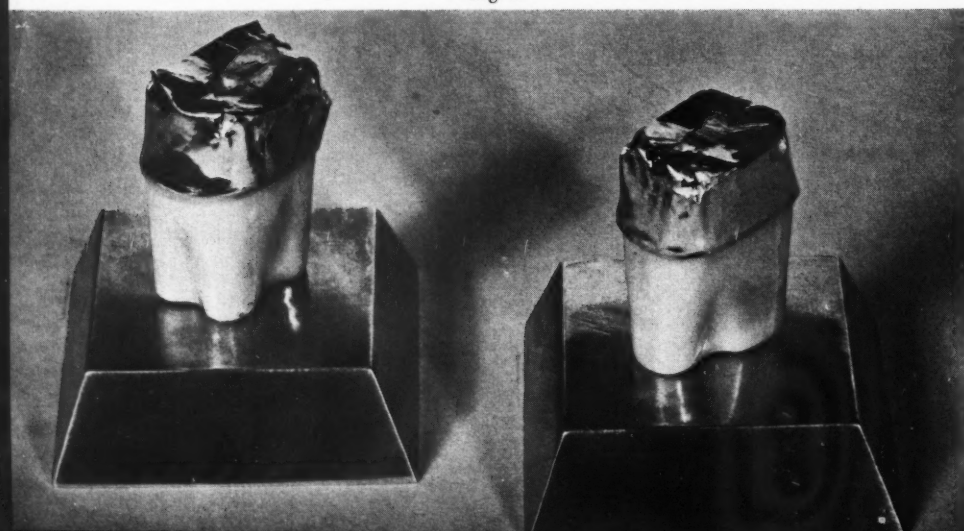


Fig. 1 (top)—A, Band soldered and in position on tooth with band forced beyond the finishing line without impinging on gum tissue. B, V-shaped slots cut at the corners on the occlusal of the band.

Fig. 2 (bottom)—A, Flaps folded over the occlusal surface. Note exposed portion of occlusal surface of the tooth structure. B, Rough corners trimmed away with a Joe dandy disk to help prevent bulk in pattern.

Fig. 3 (top)—A, Pattern ready before gold is exposed at the gingival. B, Wax removed at the gingival, ready for burnishing technique to expose the gold.

Fig. 4 (bottom)—A, Burnished portion at the gum line, rewaxed to cover the exposed gold. B, Ready for spruing and casting. C, Completed casting.

### Advantages

The technique about to be described for the construction of a full-cast crown to be used as a bridge abutment has, I believe, an advantage over the method commonly used. The crown suggested here can be made by the direct method, which eliminates the use of an amalgam die. Its construction is simple and, when completed, fits only at the gingival with a definite stopping point at the occlusal surface. This stopping point prevents the crown from being driven beyond the gingival finishing line when placed in position.

### Technique

1. After a dentimeter measurement has been taken of the prepared tooth a rectangular piece of 24 karat, 38 gauge gold, approximately three eighths of an inch wide, is cut slightly shorter than the measurement. This strip of gold is then made into a band by joining with either 18 or 20 karat solder. The band is then placed on the tooth and contoured to the gum-line so as to extend beyond the finishing line without impinging on the gum tissue. If the band does not fit snugly at the gingival, it should be cut shorter and resoldered. The completed band should extend beyond the occlusal surface (Fig. 1, A).

2. Cut a V-shaped groove at the disto-lingual, disto-buccal, mesio-lingual, and mesio-buccal corners of the band. These four V-shaped cuts will create a small flap on the mesial, lingual, buccal, and distal surfaces (Fig. 1, B) which may be folded over on the occlusal surface. These flaps, however, must not cover the entire occlusal surface. A small amount of visible tooth structure must be left (Fig. 2, A). The reason for this will be explained later.

3. The thimble-shaped matrix is now removed and the four corners are reduced with a Joe dandy disk to eliminate too much bulk when waxing the pattern (Fig. 2, B). Continue by covering this thimble-shaped gold matrix with inlay wax, including the space in the center. Place it back in position; heat the occlusal surface with a chip-blower, and have the pa-

tient bite into centric occlusion. When the patient bites into the soft wax the wax will automatically come in direct contact with the exposed tooth structure on the occlusal. Chill the pattern; remove and carve; replace on the tooth and adjust the contact point (Fig. 3, A).

4. This step is the most important in the technique and must be carried out carefully. With a sharp lance, expose sufficient wax to form a small apron of 24 karat gold about 2 mm. in width around the entire circumference at the gingival (Fig. 3, B). It will be recalled that in the beginning the 24 karat gold band is extended beyond the gingival finishing line. This is done to enable the dentist to obtain accurate results with the burnishing technique which follows:

5. Burnish the exposed apron on the buccal surface against the finishing line and over any undercuts. Lift the pattern straight off the tooth and if it does not come off easily, if the at-

tempt meets with resistance, the resistance is due to undercuts beyond the finishing line, and the pattern should then be lifted and tilted buccally to facilitate removal. On removal of the pattern a close examination will reveal a definite mark along the exact path of the finishing line. Trim the excess gold to this line. Replace and reburnish. Again, lift the pattern straight up and if no resistance is encountered, interference from undercuts has been eliminated, and the operator can be certain that the gold is in direct contact with the tooth structure at the finishing line.

6. Proceed in the same manner on the mesial, distal, and lingual surfaces.

7. When the pattern is treated as outlined, and when it can be removed without any resistance, the exposed apron is waxed again (Fig. 4, A).

8. The crown is sprued and cast in the usual manner (Fig. 4, B).

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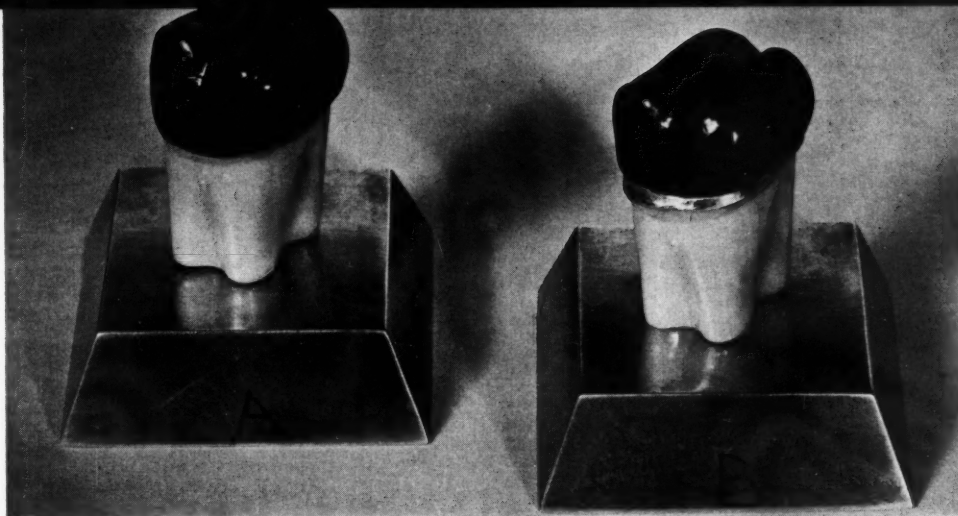


Fig. 3

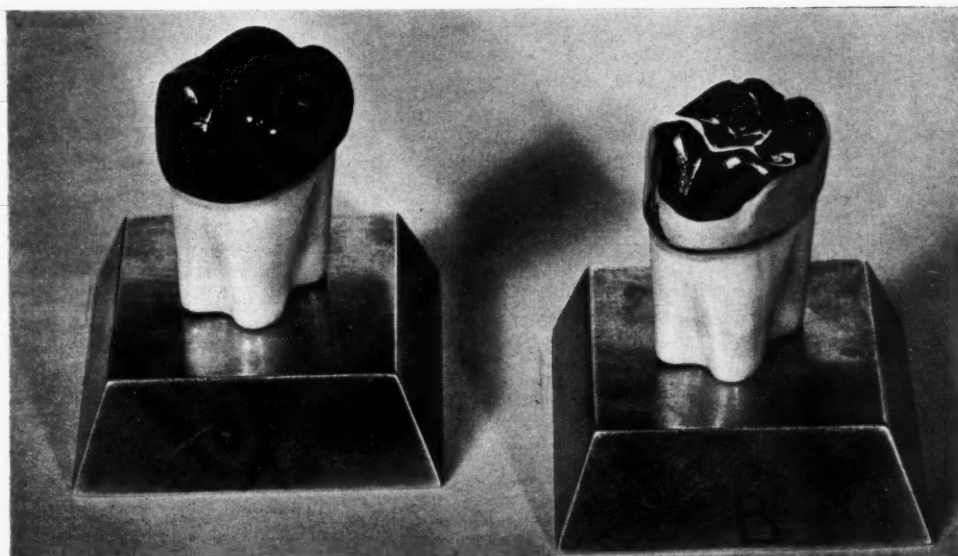


Fig. 4



# Relief of Intractable Facial Pain by Prosthetic Correction

ERVIN S. ULSAVER, D.D.S., ARTHUR F. HEYL, M.D., AUGUST L. BECK, M.D., New Rochelle, New York  
(Literary Collaboration by GEORGE WOOD CLAPP, D.D.S., New York City)

THE RESTORATION OF proper vertical dimension and centric relation restored to comfort a patient who had had extreme pain for months.

## Report of Case by Arthur F. Heyl, M.D.

**Preoperative Case History**—Mrs. B. aged 51, presented for examination October 27, 1940, complaining of an almost continual central, frontal headache, radiating from the temporomandibular joint. The pain had been growing steadily worse for three months. She reported increasing deafness, with roaring and ringing in the ears, congestion in the nasal passages, a burning, stinging sensation in the naso-pharynx and the base of the tongue. Vision had become much worse, so that by day the effort to focus on distant objects became tiring and at night it was impossible for the patient to drive an automobile.

## DIGEST

A case of intractable facial pain caused by a derangement of the normal relations of the condyles was relieved by prosthetic correction. The case is described from the points of view of the cooperating physicians and dentists. The visible diagnostic sign was a shortening of the vertical dimension from the nose downward. Other symptoms were intense pain over most of the left side of the head and face and impaired hearing and vision which did not respond to treatments other than the prosthetic correction.

A month before the patient had consulted an internist who was unable to find any cause for the symptoms. She then went to a rhinologist who gave her a few nasal treatments, without benefit. An ophthalmologist prescribed new lenses which balanced the myopia and astigmatism. After three weeks, these lenses afforded no relief of the chief complaints. Sleep was disturbed with increasing weariness and fatigue.

The only significant circumstance in the patient's history occurred eight years before when all her natural teeth were extracted and replaced with complete upper and lower dentures.

**Examination**—The general physical examination showed conditions essentially normal for the age of the patient except for the way in which she sat and held one side or the other of her face which was contorted with pain in a manner similar to that seen in mild tic douloureux. The distress seemed more localized on the left side, inasmuch as it was usually that side of the face that the patient held. The left eye was drawn into a squint so that the eye was almost closed.

**Diagnosis**—Experience in cooperating with Doctor Ulsaver taught me to recognize proper vertical dimension of the lower third of the face as an anatomic requirement and any visible reduction of this vertical dimension as an important diagnostic symptom in cases of pain in the areas here involved. On the bases of such information, the proximity of the nose and the chin and the sinking inward of the tissues of the upper lip were visible signs of a reduction of vertical dimension.

I had known the patient before the construction of the artificial dentures but had not seen her for twelve months prior to October 27, 1940. During this time the closure of the bite had become increasingly apparent. It was during this period also that she developed the symptoms described.

The next step in eliminating possi-

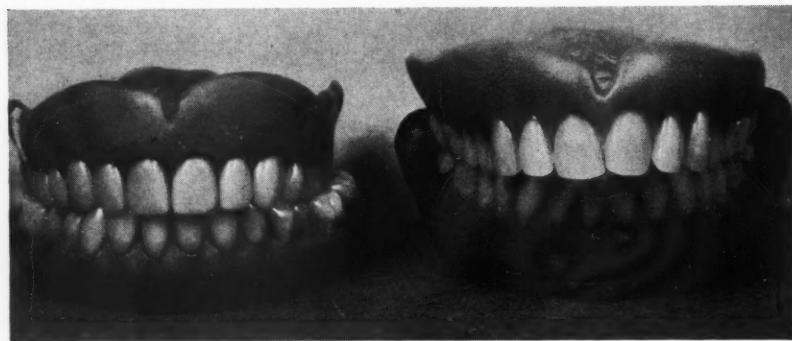


Fig. 1—Left, dentures made eight years before treatment; right, new dentures which increase vertical dimension by 7 mm.



Fig. 2—Old dentures temporarily replaced to show effect of shortened vertical dimension on appearance. Face is not flushed or contorted with pain, as it was when old dentures were worn even briefly.





Fig. 3—Appearance with new dentures in the mouth. In ordinary cases, appeal of such a restoration lies in effect on appearance.

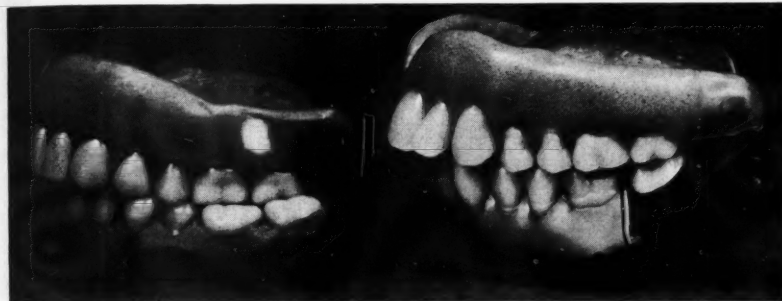


Fig. 4—Side view of old and new dentures.

ble causes of these symptoms was to refer the patient to Doctor August L. Beck for an examination of the nasopharynx and ears.

#### Report of Case by August L. Beck, M.D.

**Condensed Preoperative Case History**—Pronounced tinnitus had been present in both ears for the last three months. This was associated with pain in both sides of the face and in the maxillary region, radiating backward over the malar and temporal regions.

Blurring vision of the left eye occurred despite new glasses, prescribed a few weeks previously.

Intense pain was felt over the left side of the head, radiating into the left orbit. The head noise was only slight until three months before when it became greatly intensified.

A burning sensation was complained of in the pharynx and tongue.

Examination of the ears revealed the tympanic membranes to be flexible and not inflamed. The nose was found to have the mucosa normal in appearance. No hypertrophies were found and there was no abnormal discharge. The sinuses were clear on transillumination.

**Conclusions**—Auditory acuity tests indicated a primarily conductive type of deafness in both ears. Secondary

nerve involvement was present on the left side.

The patient was referred to Doctor Ulsaver for treatment.

#### Report of Case by Ervin S. Ulsaver, D.D.S.

**Preoperative Case History**—When the patient presented, she gave the histories which have been related by Doctors Heyl and Beck. The patient's face wore a strained expression from the pain over the front of the head. She said that her vision was blurred and that there were spots in front of her eyes.

**Examination**—The patient wore complete upper and lower dentures, made eight years previously. The alveolar tissues had resorbed a great deal which caused a noticeable reduction in vertical dimension. The closure of the bite was shown by the proximity of the nose and chin and the tension on the throat muscles caused by the upward and forward position of the mandible.

**Diagnosis**—The history and symptoms suggested a derangement of the normal temporomandibular relation, caused by a reduction of the vertical dimension which had probably produced pressure on structures in the temporomandibular joint.

**Prognosis**—There was good reason to expect considerable relief from

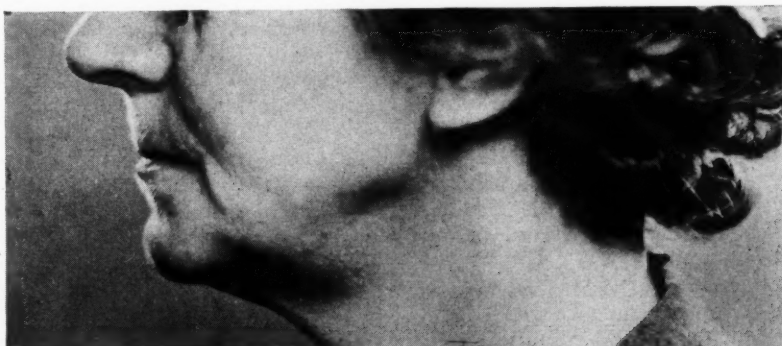


Fig. 5—Profile appearance with old dentures. Note tension of tissues below chin caused by upward and forward position of mandible.



Fig. 6—Profile appearance with new dentures. Note improved position and form of upper lip; also, note absence of tension in tissues below chin.

pain and improvement in hearing and perhaps in vision.

**Operation** (by E.S.U.)—Proper vertical dimension was reestablished with wax bite rims in such a way that the distance from the lowest point of the base of the nose to the lowest point of the chin was equal to the distance on the face from the outer corner of the eye to the corner of the mouth. This method is used by many successful prosthodontists.

Care was taken to secure proper length for the upper bite rim. When the combined height of the bite rims, in the mouth, restored the vertical dimension, the lower bite rim was shortened by 3 mm. to allow the upper and lower teeth to separate by that distance when the mandible was in the rest position.

Complete upper and lower dentures were constructed to the dimensions thus established.

**Postoperative Results**—The dentures were placed in the mouth November 1, 1940. They were in good balance, firm in all positions, and comfortable. Within two hours all pain and eye strain were gone. That evening the patient played cards, which she had not been able to do for a long time. The following day she traveled 25 miles to New York in the train without becoming car-sick, the first time for months. She read the newspaper on the train. She spent two hours in a photographer's studio while the pictures shown here and others were taken. The patient then went to a movie which she had long been unable to do because of eye-strain.

November 3, the dentures were out of the mouth for about an hour to permit some of the adjustments usually necessary after dentures have been worn. At the end of the hour, severe pain returned. It was stopped in 20 minutes by replacing the dentures.

November 10, some further slight adjustments of a few planes on the teeth were made and the patient was dismissed in a comfortable condition.

**Comment**—Derangement of the normal relations of the condyles to the other elements of the temporomandibular joint had caused intense pain. The readily visible, external sign was a shortening of the vertical dimension from the nose downward. The restoration of vertical dimension to an extent apparently normal to the patient, together with carefully de-

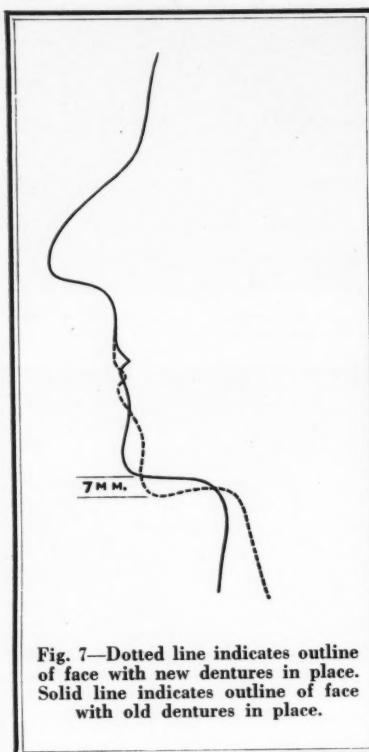


Fig. 7—Dotted line indicates outline of face with new dentures in place. Solid line indicates outline of face with old dentures in place.

terminated centric and balancing relations, quickly relieved the pain and enabled Nature gradually to effect improvements in hearing and sight.

#### Postoperative Observations

Following reestablishment of proper vertical dimension with a new set of dentures, examination by Doctor Beck showed that the tinnitus had decreased. The neuralgic pains in the head disappeared completely.

Five days after the patient first visited Doctor Ulsever, she sat at dinner, eating her first meal with the new dentures which had been in place for about two hours. Her expression was one of freedom from all symptoms, of complete comfort. Doctor Heyl had the opportunity of watching her and it seemed that the removal of all the distress from which she had suffered, the restoration of her facial appearance and of her masticating efficiency had carried the patient back to her personality of ten years before. She said she could hear the noise of the conversation at the table, a thing she had not been able to do for months. On her way home at night the patient stated that she had much clearer vision than she had had for many weeks.

In a letter dated December 1, 1940,

the patient stated that during the month that elapsed since the dentures were inserted she had continued free from all the distressing symptoms for which she had sought treatment.

#### Background for Diagnosis

To those who are just becoming interested in this necessary form of service, the following information may be helpful:

Experience in more than 100 cases of serious physical discomfort resulting from a derangement of the proper anatomic relation of the head of the condyle to the remainder of the joint, perhaps especially to the tissues in the depth of the fossa, justifies the belief that, in some cases at least, apparently slight derangements may be significant. The consequences may be pain in the temporomandibular joint or joints or neuralgia. There were two cases of tic douloureux in this series.

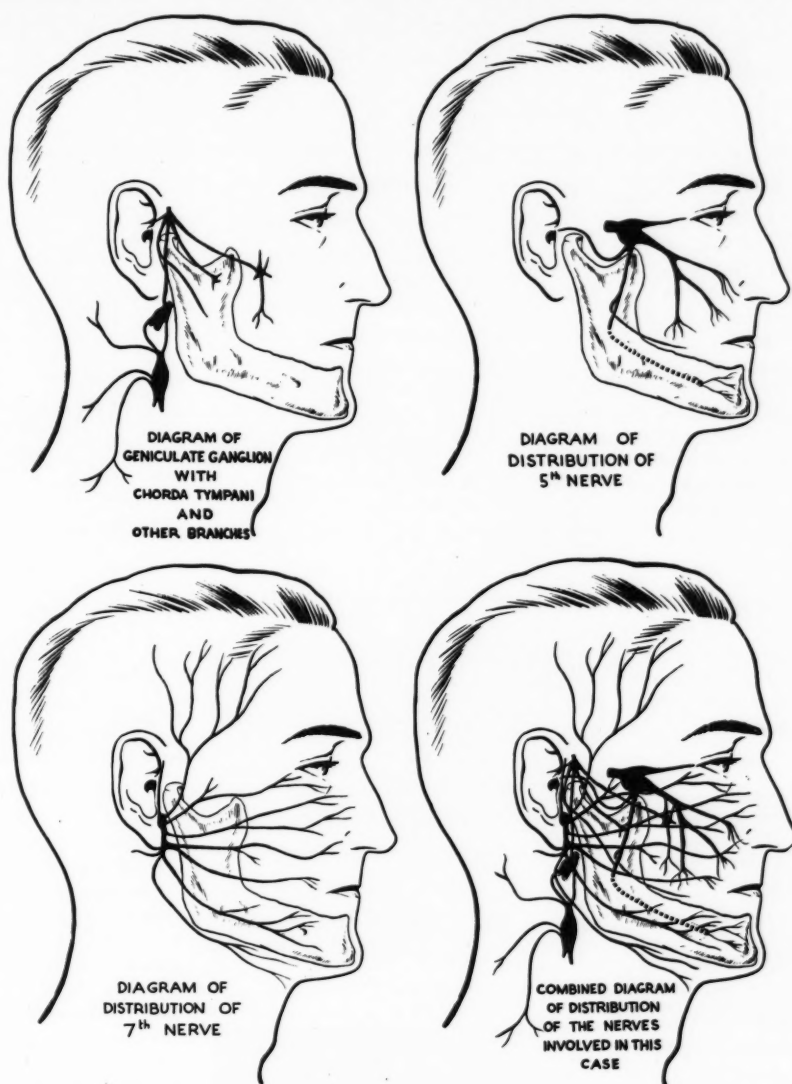
It is not necessary that the jaws be edentulous for derangement in the joint or joints to occur. It has happened to people with complete natural dentitions, when only one tooth has moved far enough out of its proper position to cause a malocclusion.

Such derangement often happens when the lower third molar has been lost and the upper third molar on the same side elongates into position behind the lower second molar. This may bring the teeth into active malocclusion. It may cause earache or neuralgia on the opposite side of the face.

If an upper third molar is lost and the opposing third molar elongates behind the upper second molar, the mandible may be thrown backward on that side with pain resulting on that side of the face.

When cusps are high or long and the teeth are in such position that when pressure is being exerted on the working side, with the teeth in lateral occlusion, the balancing contact between upper and lower teeth cannot be maintained on the balancing side of the mouth. This lack of balancing support of the mandible may cause excruciating pain. Careful grinding of the teeth to establish balancing support of the mandible may relieve the pain in a few hours.

Pain in the joint has been caused by a single cusp of a tooth or by an inlay. Such pain has been relieved by care-



Figs. 8, 9, 10, and 11—Schematic drawings illustrating nerves and branches most seriously affected by derangement of normal relations in the temporomandibular articulation. Drawings in one plane cannot show nerve distribution to base of tongue and throat.

ful grinding to reestablish occlusion.

The characteristics and intensity of the pain which is caused by maladjustments in the temporomandibular

joint and which are cured by reestablishing proper vertical relation may vary with cases and patients. The symptoms include neuralgia of the

head and face, burning in the tongue and throat, blurring of the vision, deafness, vertigo, and tic douloureux.

*Professional Building.*

## UNSOLICITED MANUSCRIPTS

FROM TIME TO TIME THE DENTAL DIGEST receives inquiries regarding its attitude toward unsolicited manuscripts. These are especially welcome. There are many excellent dentists who have original suggestions, who have improved or modified a technique or have refined an operation; but these men do not contribute to the literature because they are afraid they do not know how to "write."

Dentists are not expected to be "writers." If they will tell their stories in a straightforward manner, the editors will be happy to cooperate with them in presenting their material. Unsolicited manuscripts sent to THE DENTAL DIGEST are read with care and open-mindedness and are reported on promptly.



# New Combination Removable Bridge

PERLEY J. LESSARD, D.D.S., Portland, Maine

NOT SO LONG AGO dentists looked only to the mechanics of a bridge to determine its worth. Today dentistry has advanced so far that now physics, esthetics and biology must be considered in the requirements of good bridgework.

A case will be cited here in describing a satisfactory bridge recently completed. The patient, a young man, aged 18, presented with a space of 7 mm. between the lower laterals. The centrals were loose and denuded. He had a receding chin, as is usual in such cases, with the lower lip drawn inward. The central teeth were extracted.

## Technique

A bridge was constructed consisting of two three-quarter crowns with female precision attachments as abutments, a removable block consisting of a gold bar with the male attachments, an acrylic saddle, and denture pin teeth. The bridge is an ideal res-

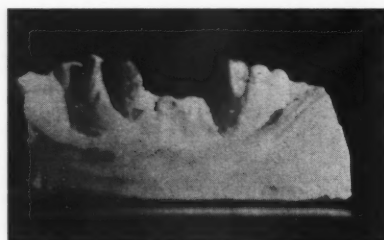


Fig. 1—Model with silver dies in position.

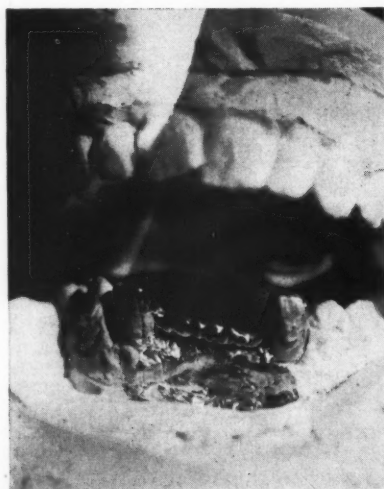


Fig. 2—Three-quarter crowns, corrugated bar, precision attachments adapted.

## DIGEST

A bridge was constructed for a patient having extensive gum absorption. The bridge consisted of two three-quarter crowns with female attachments as abutments, a removable block consisting of a gold bar with male attachments, an acrylic saddle, and denture pin teeth. The technique is outlined and illustrated.

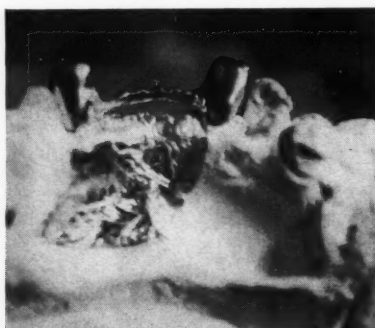


Fig. 3—Posterior view of Fig. 2.

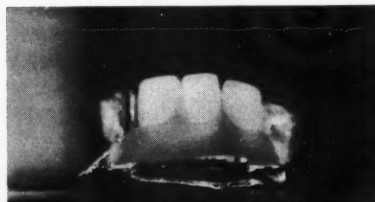


Fig. 4—Case waxed, partly tin-foiled.



Fig. 5—Finished case, labial and lingual views.

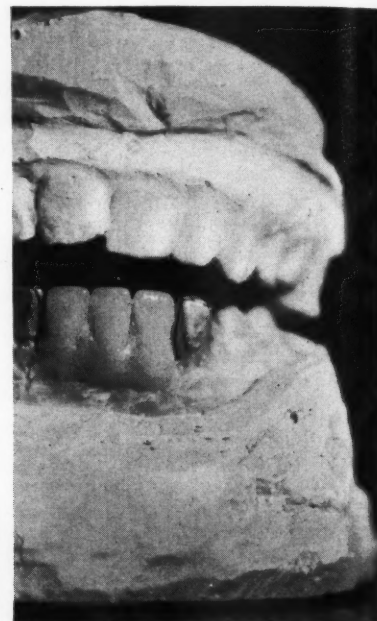


Fig. 6—Finished case on model.

toration in cases in which extensive absorption has taken place.

The two laterals were used as abutments. Two three-quarter crowns were cast in such a way that gold would not be in contact with gum tissue.

1. The castings were adjusted to the natural teeth in the mouth.

2. A plaster impression was taken and the bite registered.

3. The two amalgam dies were oiled and placed in position inside the castings in the impression.

4. The impression was poured in stone and the relation of the upper teeth was affixed.

5. A corrugated gold bar, about 16 gauge, of the correct contour to bring out the lower lip, was cast with fine clasp gold metal.

6. The precision attachments were adapted to the crowns and bar with the use of a parallelometer.

7. The female part of the proximal contact shank type precision attachment was soldered to the mesial of the castings. The male part was soldered to the ends of the bar.

8. At this point the case was transferred to the mouth and checked for fit, contour, and to see that no gold



Fig. 7—Lingual view of case on model.



Fig. 8—Abutments in place in the mouth.

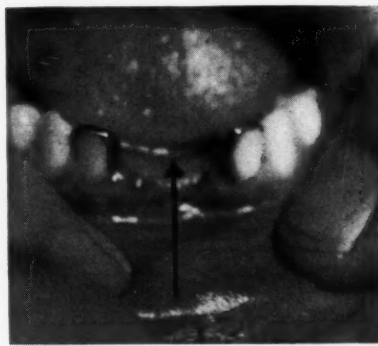


Fig. 9—Note bar indicated by arrow.

touched the tissue. The gold bar was 3 mm. above the gum ridge.

9. Three denture pin teeth, with the modern translucent porcelain were selected for mold, size, and color.

10. The case (block) was waxed to engage the gold bar, and the teeth were added in contour to the lateral excursion.

11. The wax block was removed from the case, tin-foiled, and invested in the usual manner.

12. Pink acrylic was packed in after the wax was boiled out.

13. The case was pressed, cured, and finished.

The restoration described is perfectly stable. The bar not only adds



Fig. 10—Bridge in place in mouth.

strength to the saddle but insures less strain on the abutments.

The restoration offers the best in esthetics: The blue translucent tips of the supplied teeth match the natural ones to a degree never before attained in any other type of bridgework. The pink acrylic and the living tissues blend harmoniously. The lower lip is brought gently forward in a normal position.

The block can be removed and cleaned and also can easily be repaired for tooth fracture or for adding acrylic in case of further recession of the jaws.

51 Deering Street.

## NOTICE

A series of oral surgical clinics, open to members of the dental profession, will be given in the Dental Ampitheater of The Bronx Hospital on Friday afternoon, June 6th from 2:30 to 5 P. M. The address is Fulton Avenue at 169th Street, Bronx, New York.

The following cases are scheduled as first in the series. Later case announcements will be posted on the bulletin board of the Dental Clinic.

1. Removal of a large mandibular, dentigerous, bilateral cyst in a boy, aged 12.
2. Hare-lip and partial cleft palate in an infant, aged 1.
3. Removal of impacted and unerupted upper right third molar in a woman, aged 34.
4. Results of the healing of a traumatic fracture of the mandible in an edentulous mouth, during the elimination of infection, causing extensive cellulitis of the face and neck, in a woman aged 65.

MEMBERS OF THE PROFESSION ARE WELCOME.

# The Use of Hydrocolloid Impressions for Indirect Inlays

JACOB BARDIN GOODMAN, D.D.S., Brooklyn, New York

## DIGEST

A hydrocolloid impression technique has been adapted for use in making indirect inlays, ranging from simple occlusal inlays to complicated three-quarter crowns and mesio-occluso-distal inlays. The hydrocolloid material is first prepared in cartridge or cylinder form and the method of making these cartridges is described in detail.

The advantages suggested are the following: (1) The procedure requires approximately ten minutes; (2) the cost does not exceed five cents; (3) the method is easier on patients; (4) the impression is accurate.

HYDROCOLLOID IMPRESSIONS have been used successfully for the construction of fixed bridges, and especially for the construction of partial dentures. Karl W. Knapp, D.D.S. of New York, has introduced a system of making use of hydrocolloid impressions for fixed partial dentures. He has proved the success of its adaptation, and I have constructed several successful cases by Doctor Knapp's technique. After I became accustomed to handling the hydrocolloid impressions for fixed and removable partial bridgework, I began to wonder about its usage for inlay impressions alone. To date, I have made approximately seventy-five inlays, ranging from a simple occlusal to complicated three-quarter crowns and mesio-occluso-distal inlays.

## Materials

The materials necessary for this technique are a tube of hydrocolloid impression material; an all-metal syringe with B & D canula needles,

gauge 19 and 21, which fit the screw thread, and an "adaptor," as Doctor Knapp calls it, which will fit the end of a large hydrocolloid syringe; Willett inlay trays, and compound.

## Preparation of the Tooth

Prepare the tooth by removing all caries and securing the proper retention form necessary for a good inlay. If the preparation extends below the gingiva, when the gingival tissue rests on part of the preparation, it will be impossible to get a proper impression with the hydrocolloid material until this tissue has been pushed away. This will give the operator a clear, unobstructed view of the preparation in its entirety. To take any impression of a prepared tooth, it is essential that the dentist obtain a clear view without any obstruction; otherwise it is impossible to obtain a proper impression.

When the tissue overhangs in a proximal cavity, such as a mesio-occlusal or a disto-occlusal, the tissue may be pushed away by packing into the gingiva with gutta-percha or temporary stopping for a twenty-four hour period. If there is bleeding at the time the impression is to be taken, the impression-taking should be postponed for another visit, because the film of blood on the tissue will prevent a clean-cut impression.

If there is excessive tissue, or the

preparation is below the gingiva on the lingual or buccal surfaces of a tooth prepared as a three-quarter crown or full crown, it is easy to force this tissue back by encircling the tooth at its neck with ordinary white wrapping cord, which is dipped into a zinc oxide and eugenol paste, tied tightly below the gingiva as necessary. This cord will absorb the saliva and will expand and retract the tissue. At the following visit, it will be easy to obtain a good impression below the gingiva.

## Technique

1. Upon completion of the preparation (Fig. 1), fill a Willett tray with soft modeling compound, and place over the prepared tooth as well as over one adjacent tooth on each side (Fig. 2).

2. Force the impression below the gingiva on the buccal and lingual surfaces. Remove the impression without chilling.

3. Gouge out of the impression with a sharp knife the entire tooth that was prepared for the inlay and also the approximating parts of the adjacent teeth, retaining enough of the periphery compound buccally, lingually, and occlusally to be able to reseat the compound impression.

4. At the completion of the preparation, set up some boiling water into which has been placed the all-metal

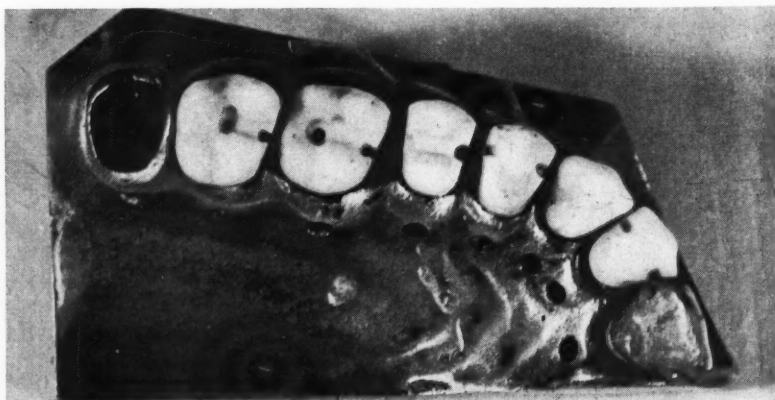


Fig. 1—Preparation of teeth to receive inlays.





Fig. 2—Compound impression of prepared tooth and of at least one adjacent tooth on each side.

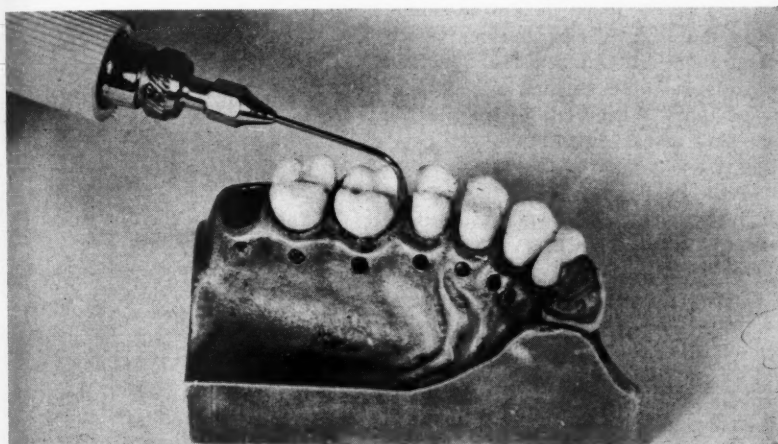


Fig. 3—Syringe loaded with hydrocolloid material is placed at gingiva where hydrocolloid material will be forced out to cover entire preparation.

syringe loaded with a cylinder of hydrocolloid impression material. The hydrocolloid material should be kept in boiling water for at least five minutes but no longer than ten minutes.

5. Paint the gouged out compound impression with chloroform in order that the hydrocolloid material will more readily stick to the compound impression.

6. When the hydrocolloid syringe has been properly heated, remove it from its bath, remove the hub cap, and place on the syringe a B & D canula, as illustrated in Fig. 3. (Directions for making the hydrocolloid cylinders will be described later.)

7. A thermometer should be immersed in the hot water bath to see that the hydrocolloid material is about 150° F. or 160° F. before removing it from its bath. If the material is excessively hot and used immediately, it will burn the gingiva and inflict

pain on sensitive dentine. If it is considerably below 140° F. the working consistency will be altered and will undoubtedly produce a poor impression.

8. Squeeze out half the contents of

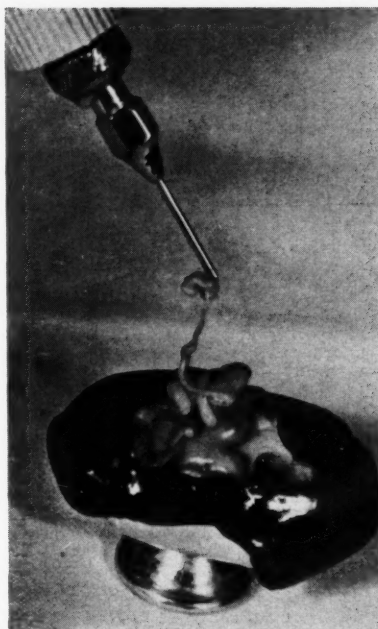


Fig. 4—Compound tray being filled with hydrocolloid material. Compound of prepared tooth and parts of adjacent teeth have been rimmed out so that sufficient hydrocolloid material can be placed in the tray to give enough bulk to take a proper impression.

the syringe into the gouged out area of the impression tray (Fig. 4). Before applying the syringe to the tooth, dry the area thoroughly and use a warm air blast, because saliva will prevent the hydrocolloid material from adhering to the preparation. If necessary, block off the area with cotton rolls to maintain dryness.

9. Place the tip of the needle at the gingiva and start squeezing out the hydrocolloid material. Make sure that the point of the needle is not moved away from the tooth structure. Work from the gingiva toward the occlusal

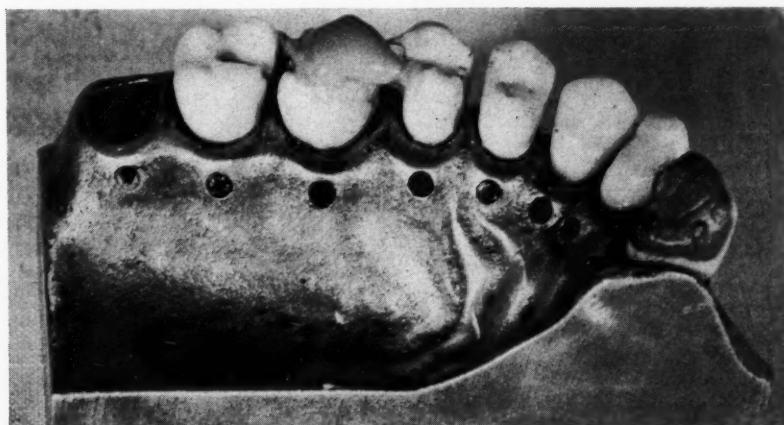


Fig. 5—Hydrocolloid material poured on prepared tooth.

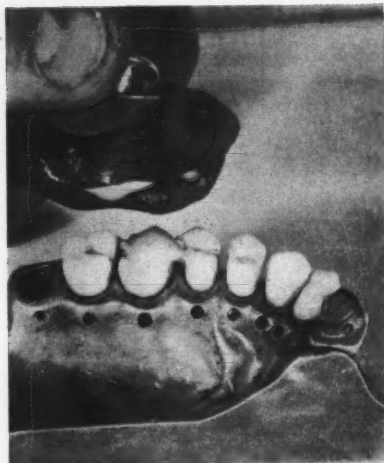


Fig. 6—Placing of compound impression over hydrocolloid on tooth to incorporate into one impression.

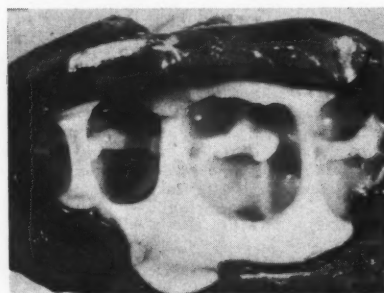


Fig. 7—Impression of hydrocolloid material when withdrawn from the typodont.



Fig. 8—Boxed in and poured stone model of hydrocolloid impression.

surface and cover the entire preparation fully, as shown in Fig. 5.

10. Place the impression tray containing the hydrocolloid material and compound at its proper place in the mouth (Fig. 6), setting it back in the same position as when the compound impression was taken. Spray this impression with cold water for five minutes until thoroughly chilled. A saliva

ejector is used to draw off the water. This impression should have a smooth, clean-cut appearance, giving complete and sharp detail of the preparation and adjacent teeth (Fig. 7).

11. It is best to pour a stone model at once (Fig. 8) if time is available. If not, immerse the impression in cold water until the model is poured. Box in the impression by building it up about one-half inch above, to give a large enough base to facilitate handling. It is advisable not to leave the impression overnight as there might be some change. It is well, therefore, to see when taking the impression that reasonable time is available to pour the model.

12. Mix a good die-stone to a putty consistency, using a vibrator to pack the impression. Place this impression into an air-tight glass container with water about a fourth of an inch high, so that it will not reach the stone model but will keep the hydrocolloid material damp during the setting time of the stone die. This will offset the rapid heat generated by the stone during its drying process and will prevent any alteration of the hydrocolloid material.

13. After the model has been in this container for at least one-half hour, remove the compound by placing in hot water. Then chill the hydrocolloid material thoroughly and it will strip off easily from the die. If the hydrocolloid material is warm, it will be difficult to remove.

14. At this stage, proceed in the usual manner to make the indirect wax patterns; that is, oil the die, make the wax pattern, and cast.

#### Method of Making Hydrocolloid Cartridges

The following method is employed

in making the hydrocolloid cartridges:

1. Boil a tube of hydrocolloid material in an all-metal syringe for at least five minutes.

2. Remove the cylinder head at the bottom of the syringe, and replace with a B & D adaptor. Remove the plunger and hub cap from the metal syringe, and place the small metal syringe into the adaptor that is screwed onto the syringe (Fig. 9). Fig. 9 shows the syringe with the adaptor attachment at the end and also shows where the plunger of the all-metal syringe is withdrawn from the syringe.

3. Immerse the syringe up to the adaptor in cold water, and without jarring the syringe, force the plunger into the hydrocolloid material, which in turn, will be forced into the metal syringe, as illustrated in Fig. 10.



Fig. 10—Hydrocolloid cylinder being forced out of syringe into a humidor where it is stored for future use.

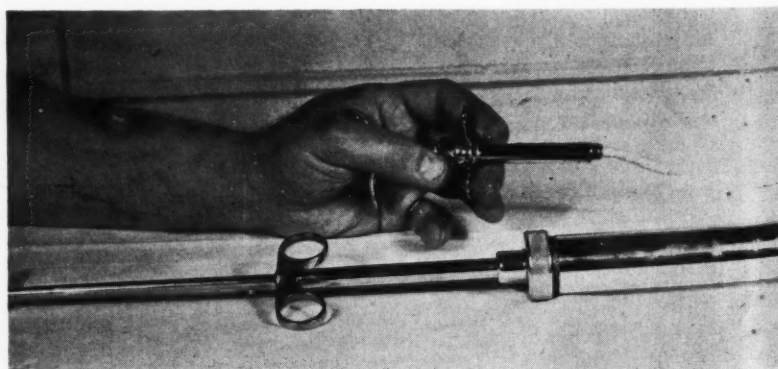


Fig. 9—Syringe with adaptor at end. Hydrocolloid material has been forced through the large syringe into the small hand syringe, which is placed in cold water to chill, and the plunger is inserted into the syringe forcing out a hydrocolloid cylinder.

4. When filled to the tip, disconnect the syringe and force out the chilled hydrocolloid cylinder.

5. Repeat this procedure to obtain approximately fifteen of these cartridges from one tube of hydrocolloid material.

6. Store these cylinders in a glass container having a receptacle to hold moist cotton, so that the hydrocolloid material will remain moist, and not deteriorate by drying.

#### Comments

Once the cartridges have been made, it takes no longer to take the impression with the hydrocolloid material than to select the correct copper band, trim it down, and prepare for the indirect impression technique. I have found that the procedure sug-

gested here requires about ten minutes to complete. This, I believe, is the length of time usually required to take an accurate indirect compound inlay impression.

The average impression does not exceed five cents in cost.

Most patients prefer this method to the compound band impression because the latter method causes pain and bleeding when the band is forced under the gingiva.

The impression is accurate. I have taken numerous impressions of the same teeth, both by the direct and indirect methods and was unable to distinguish any differences. I have found the hydrocolloid material to be far superior to any other material used today for making inlays by the direct method.

One impression may include two or three adjacent teeth which have been prepared for inlays, at the same time, thus the need of taking two or three impressions is eliminated.

A one-tooth fixed bridge can easily be made by this method. It can be finished in one visit after the preparation of the abutment teeth; thus it is unnecessary to take a plaster impression after the inlays have been tried in the teeth. The hydrocolloid will give a perfect picture of the abutment teeth and their adjacent saddle area as well as their relation to one another—all in one impression.

It is well to try this technique on a typodont until proficiency in handling the hydrocolloid material is acquired.

1509 Foster Avenue.

## The Selection of Cases for Space Maintainers: An Abstract

JOSEPH T. COHEN, D.D.S., North-West Dentistry, 20:75 (April) 1941

A project was started in 1926 and carried on until the present at the Institute of Child Welfare, University of Minnesota to examine periodically the mouths of a group of pre-school children who had lost their molars prematurely and who had had no space maintainers placed in their mouths. The object of the study was to determine whether the spaces always closed, and if so how much and how often; whether the premature loss of these teeth always resulted in an impacted bicuspid and a malocclusion of the arches.

Impressions were taken of the mouths of 156 pre-school children and the procedure was repeated annually on the same children. In all, 195 casts were made for this group covering the ages from 2 to 16 years. There was a total of thirty-three deciduous molars lost at the average age of 6 years and 9 months. Fifteen of these were second deciduous molars and eighteen were first deciduous molars. Measurements were graphed showing the relationship of the distance from the mesial of the deciduous cuspid at the gingival to the distal of the second deciduous molar at the gingival from 3½ years to 13½ years of age. Similar measurements were made between

comparable points of the succeeding permanent teeth during the arch development through the transitional period when the permanent cuspids and bicuspid replace the deciduous teeth.

#### Summary of Conclusions

1. Of the cases studied 94 per cent apparently developed normally despite the premature loss of the first deciduous molar.

2. The age at which the tooth was lost appeared to have no bearing on the closure of the space in the case of the first deciduous molars.

3. In the case of the loss of the second deciduous molar, however, only 60 per cent showed no ill effect with regard to arch development.

4. The retention of healthy deciduous teeth until the time for them to be lost should be the aim in treatment.

5. Permanent teeth frequently erupt in a crowded condition in the arch despite the fact that no deciduous teeth were permanently extracted.

6. There is a natural decrease in arch dimension following the loss of the deciduous molars of from 1 mm. to

2 mm. The permanent bicuspid occupies approximately 1 mm. less in the upper arch and 2 mm. less space in the lower arch than do the deciduous molars. The premature loss of the second deciduous molar frequently results in an extensive closing of the space, forcing the succeeding permanent teeth to take an abnormal position in the arch.

7. The premature loss of the first deciduous molar seldom results in the closing of the space and the crowding of the succeeding tooth.

8. This study indicates the necessity for careful study before placing space maintainers in the mouths of children. The determining factor in the case of the first deciduous molar is whether there is the necessity to restore function, in which case a functional maintainer should replace the lost tooth. The loss of the second deciduous molar calls for a space maintainer at the first indication that the space is materially closing. There are complicating problems involved, however, if the second deciduous molar is lost before the first permanent molar erupts. In such cases a maintainer of the type introduced by Willett should be employed. This may require preliminary surgery.



# An Evaluation of Thermal Therapy

JOSEF NOVITZKY, D.D.S., San Francisco

THE STORY OF inflammation dates back over the years. In the eighteenth century, William Hunter stated, "Inflammation was a defensive reaction caused by injury and tended to correct the injury." Cohnheim, seventy-five years later, described with accuracy the changes occurring in blood vessels of an injured part. Since then, workers eminent in physiology, pathology and immunology, have confirmed the importance of maintaining circulation in the treatment of inflammation.

In dentistry, frequently cold is applied to inflamed and swollen surfaces despite the fact that cold stops the drainage of lymph away from the inflamed region, and produces the very condition that cold is meant to correct. Mechanically, cold will stop some of the exudate from small blood vessels because it stops the blood current itself. But by stopping circulation of the blood and by retarding drainage from the field, it produces conditions that are not physiologic (normal); they are pathologic (abnormal).

It has been argued that cold kills the infection producing the irritation and the inflammation. There is no foundation for this statement. Indeed, the person that advances such a theory will state in the next breath that it makes no difference whether hot or cold is used, as neither penetrates beyond the external tissues. If the objection were correct in the first instance, it could be compared to the bear that killed a fly on his master's head by crushing his master's skull along with the fly. Regarding the second statement, it ignores the conduction of warmth by circulation, which is factual, and it also ignores the relief of internal pressure by drawing blood to the surface with moist heat, which is also factual.

It is not generally appreciated that we have an auxiliary capillary system that contains little or no blood while the part is at rest. This is obvious in muscles. When muscles are active, blood is diverted to the working part and auxiliary capillaries fill with blood. This capillary system is also observable with the microscope, in the

## DIGEST

Dental swellings, other than traumatisms, are usually due to infection. Moist hot applications are advised to prevent stasis in blood vessels, increased protein concentration and tension in the inflamed tissue, and blocked lymph circulation. Moist heat is recommended because the moisture prevents overheating. Dry heat may prove just as injurious as cold.

Cold applications are injurious inasmuch as they further inhibit the circulation and increase the destructive results of infection. Cold is indicated, however, in fresh cases of injury when blood vessels are ruptured and bleeding.

Therapy should not be the sole method of relieving an acute suppurative phlegmon. Therapy in advanced suppuration should be delayed until after surgery. Tooth extraction and bone surgery should be postponed until the infection is no longer diffuse and normal physiologic circulation has been restored.

finger tips of man. Moist heat will show two or more corpuscles passing the line of vision where only an occasional corpuscle passed before the heat was used. Capillaries in the skin are centered around the papillae. When papillae are subjected to cold, contraction takes place and "goose pimples" are visible. At such times there is little circulating blood in the skin surface. The blood has been driven internally.

If this automatic regulation were

not present in the skins of warm blooded animals, we would have become extinct. If cold did not result in the forcing of the blood away from the surface into the vital organs, the surface blood vessels would rupture, as do the deeper vessels when a limb is badly frozen.

This is seen in plants that winter kills. These plants have not become acclimated. They do not conserve the sap in the vital centers, the root system. Other plants that have evolved and developed survival in cold regions do not rupture their branches through expansion of the frozen sap, because the sap is underground in the roots, and when spring comes, new growth starts from the roots.

It should be generally recognized that the human body does not contain enough blood to fill all the blood vessels. Indeed, in conditions of extreme loss of tone, the relaxed vessels of the liver alone will hold all the blood in the body. These conditions, to be sure, deal with the grave states of circulatory shock, which is death itself, and need not be considered in this discussion. It is generally known that blood is sent where there is activity. It is known for instance, that a full stomach and digestion require blood in the digestive organs. At such times, vigorous muscular or mental effort, if it means nothing else, means digestion will be halted, and in persons not robust, will cause actual distress.

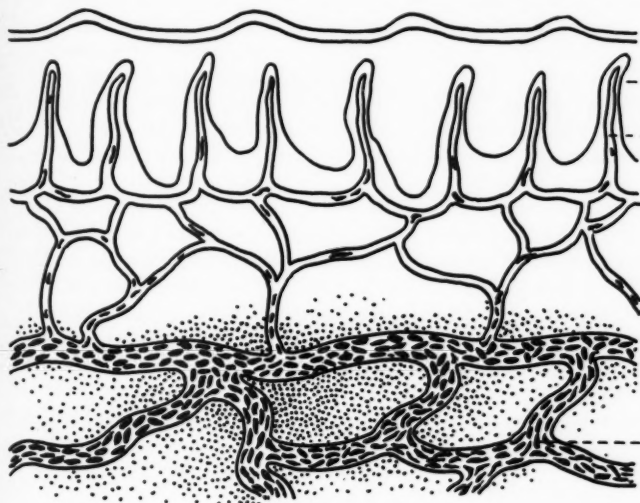
The principle of relieving internal congestion by drawing blood to the surface with moist heat is used in reverse to stop internal bleeding. Thoughtful physicians do not put ice on an abdomen to stop internal hemorrhage, because ice drives the blood internally and increases the bleeding internally. Physicians who struggle against peripheral, vascular occlusion in the lower limbs of their patients, have learned to protect those patients to the utmost from cold, because cold stops the flow of blood in the crippled circulatory systems and arrested blood supply means amputation.

It is permissible to use cold in fresh cases of injury when blood vessels are

# EFFECT OF HEAT AND COLD THERAPY ON THE BLOOD VESSELS OF THE SKIN



Skin surface dry.  
Sweat glands not functioning.



Papillae contracted and elevated.  
Circulation of blood in super-  
ficial vessels and lymph retarded  
or blocked.

Deep vessels, if concerned in  
an irritation, become dilated  
and congested.  
Blood crowding through deep  
vessels.

Fig.1

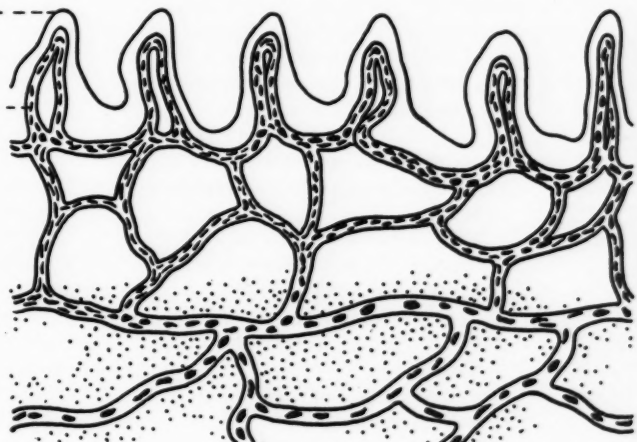
OIL SILK

## HOT WET PACK

Skin surface warm and moist.  
Sweat glands functioning.



Papillae expanded.  
Good circulation of blood in  
superficial vessels and lymph.



Circulation in deep vessels  
maintained.  
Blood pressure in irritated  
field relieved.  
Edema and pressure not  
troublesome.

Fig.2

R. BARTENBACH

ruptured and leaking. After the clot has stopped internal or external bleeding, hot, moist compresses applied a little later will cause rapid rebuilding of blood vessels, removal of exudate and clot, and restoration to normal.

Moist heat is recommended in all cases, as dry heat tends to blockade circulation through overheating.

The diffusion of moisture in moist, hot applications makes over-heating improbable.

It should also be mentioned that therapy of any kind is out of place in advanced suppuration until after necessary surgery has been done.

Evidence has not been found to warrant the change from wet heat to cold in the treatment of inflammation.

### Summary

In summing up, dentists will find cold of value in retarding external or superficial bleeding. Trauma will furnish a good example of subcutaneous bleeding in the contusion known as a "black eye." Ankle sprains, also, are usually accompanied by ruptured blood vessels. Here, the idea would be to limit leakage from injured blood vessels and to allow clot to form. Twelve hours later, when bleeding has stopped, the cold

applications may be changed to moist, hot compresses. This stimulates circulation of the blood and of the lymph. In this way, discoloration (clot) and edema (lymph and serum collections) are carried away and the part reverts to normal.

Dental swellings, other than traumatism, are usually due to infection. Stasis in blood vessels, increased protein concentration and tension in the inflamed tissue, and blocked lymph circulation will be definitely improved in the early stages by moist, hot applications. Cold applications in these cases are injurious, as they still further inhibit the struggling circulation and increase the destructive results of the infection.

Therapy obviously should not be the sole method of relieving an acute suppurative phlegmon. In advanced suppuration, incision is necessary to evacuate gas and fluid and to allow external drainage. Moist, hot applications may then be used to encourage circulation and to accelerate a limitation of the infection and allow a return of normal physiologic processes. Tooth extraction and bone surgery should be postponed until the infection is no longer a diffuse one and normal physiologic circulation has been restored.

It has been argued that hot appli-

cations will throw a large volume of infection into the blood stream and that, therefore, the moist heat would be dangerous. The increased protein concentration of the tissues in inflammation makes the reversibility of blood exudates in such tissue impossible while the osmotic pressure in the tissues is high. We are not ordinarily dealing with blood stream infection in these cases; we are witnessing lymph stream infection. For that reason the lymph and serum collection should be drained externally until the normal defense of the part becomes dominant. This is also the reason why blood vessels in bone should not be opened by surgery at a time when infection is dominant in the soft tissues, because of a possibility of converting the lymph and tissue infection into a blood infection with disastrous results to the patient. When circulation becomes normal, the defense of the part is normal and bone surgery may then be undertaken with safety. Moist heat is used because overheating the part is made improbable by the protection furnished through the diffusion of moisture. Dry heat may prove just as injurious to circulation as cold, because of the danger of over-heating and blocking the blood vessels.

909 Hyde Street.

## Causes of Gold Inlay Failures: An Abstract

W. E. TAYLOR, *The New York Journal of Dentistry*, 11:215 (May) 1941

Failure means neglect or lack of performance or loss of function or power. The causes of failure to function or loss of the gold inlay are these:

1. Disregard of the cardinal principles of cavity preparation:
  - a) Failure to obtain the required outline form, resistance form, retention form and convenience form.
  - b) Failure to remove all carious dentine, to protect weak cusps, and frail enamel walls.
2. Faulty cementation.
3. Faulty contour or lack of contact, resulting in
  - a) destruction of soft tissue attachment;
  - b) periodontal complication.
4. Overhang at the cervical margin. (Roentgenography has greatly reduced the incidence of this cause of failure.)
5. Hyperemia of the pulp as a result of
  - a) overheating the tooth during cavity preparation, with or without anesthesia;
  - b) carelessness during polishing the finished restoration.
6. Extreme percussion of the tooth during mastication caused by unnecessarily hard golds.
7. Faulty laboratory technique. (Standardization of the laboratory technique is recommended.)
8. Distortion of an impression at its inception:
  - a) the copper band must be properly trimmed to embrace only the margins of the cavity;
  - b) the compound or wax must be thoroughly chilled under pressure;
  - c) the impression must be removed easily from its seat in the cavity—not pried or twisted.
9. Failure to care for a cavity properly between sittings. (The tooth may become so sensitive that it is permanently impaired.)
10. Esthetic offensiveness. (The patient and the dentist should understand each other in advance as to the display of gold that is necessary.)



## *The Editor's Page*

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SOME WHO SERVED in the first World War had experiences in the dental and medical services of the Army which are not of pleasant memory. The dental facilities were often entirely inadequate and many of the procedures were administered without benefit of the refinements of anesthesia. The medical treatment for the common cold and other simple disorders was frequently of the empirical shotgun type. But all this has changed. In the years since the first World War the Medical Department of the Army has been reorganized and is now prepared to provide services equal to and in many respects superior to the medical care given in private life.

It is not wise to take the word of either the friends or the traducers of the type of medical service offered in Army life. The best and only way to arrive at a valid opinion is to make an inspection of a typical Army Camp. The Reception and Replacement Centers of Camp Grant, Illinois represent fine examples of the modernized Army Medical Corps. Here in a period of slightly more than three months, a splendid hospital has been built with none of the frills or secondary interests to impress patients but equipped to do an efficient job quickly and thoroughly. The dental infirmary, the dental laboratory, the x-ray room have the finest possible equipment. They are planned for excellent service. The materials on the stock room shelves are the best that can be bought.

Every dental officer is furnished with sufficient enlisted personnel as assistants to handle book-keeping and details so as to leave him free to practice dentistry. Everything I observed in this dental organization moves smoothly; the methods used are the most modern in dental practice, and the operators are taken from the cream of recent dental graduates.

The old mess hall has given way to the modern cafeteria. The bunk houses have been replaced by modern, clean, light and airy dormitories. Young men who in civilian life would be ambulatory when suffering from minor upper respiratory infections are immediately put to bed under the Army routine. In each ward, a medical officer is in constant attendance. Diet kitchens cater to every ward, and adequate nursing is given to the sick.

One has the feeling when inspecting one of these new Army Camps that many of the young men inducted into the service are here receiving better nutrition, are living in more hygienic surroundings, and are receiving a higher and better type of medical (including dental) care than they knew in civilian life. By a higher type of dental care, we do not mean gold inlays, porcelain jacket crowns and baked root-tip fixed bridges. Many of these soldiers previously received no dental care at all or only such care as toothaches drove them to seek. In the Army, routine examinations lead to early detection of incipient caries and correction by amalgam restorations and the replacement of missing teeth by serviceable removable appliances.

This conditioning to adequate health care that volunteers and draftees are receiving in the Army will be carried back by them into civilian life where their standards of dental care, for example, will be higher by far than they were when they entered the service. They will doubtless be prepared to accept and expect a higher quality of care than they thought necessary previously. If they are not able to afford such care in the depression years that are sure to follow this war, they will probably make their demands felt and ask for free medical and dental care to be furnished by the Government.

# Factors in Correcting Jaw Position Relative to the Abnormal Temporomandibular Joint: Treatment\*

(Concluding Installment)

TRAVIS E. KALLENBACH, D.D.S., St. Louis

## Clinical Procedure for Observation and Treatment of Abnormalities

In the normal dentulous cases as well as in the many abnormal cases in which I have attempted correction, I have relied on a simple method of observing and determining the normal characteristics of each.

The patient is seated in a comfortable position in the chair, which should not be tilted backward, and the head is placed erect in the headrest, so as to prevent any possible strain on the neck and gravitation of the mandible backward. He will then be relaxed when told that he is to have a complete examination made of his mouth at the time.

After making a cursory inspection of the usual clinical aspects, observations of the aforementioned factors are made to permit a differential diagnosis.

**The "Spacer" Test**—To assist me in this, an orangewood stick, from 5 mm. to 8 mm. in diameter is tapered, beginning about an inch from the end, down to about 0.5 mm. The "spacer" is inserted gently and easily between the upper and lower anterior teeth just to the point of touching the upper and lower anterior teeth simultaneously, while the mandible reposes in the neutral rest zone. Normally this space should not exceed from 3 mm. to 4 mm. in the anterior region and approximately from 0.5 mm. to 0.7 mm. in the posterior region.

Normally, occlusal contact will be observed to take place at the upper limits of the zone.

While placing the spacer, care is al-

## DIGEST

Occlusal splints of acolite or gold serve temporarily to correct jaw position while the temporomandibular joints are healing their injured structures, and serve to relieve painful symptoms accordingly.

It is not the purpose of correction and treatment to rejuvenate the mechanism principally to certain detailed and specific measurements in order to compare the finished case with that of a 16 year old patient.

Relief and correction are achieved by repositioning the mandible so as to regain a normally balanced function and in order that the complex factors will function harmoniously as a unit.

ways exercised to place it gently against the upper teeth. If placed against the lowers, the slight pressure against them offers enough resistance to stimulate muscular action and mandibular movement.

The neutral zone provides a guide, not a registration to be transferred to some instrument, to which a correction should be made. The spacer serves as a simple instrument to assist in observing any deviations with respect to the guide; also, as a means of testing temporomandibular abnormalities.

Place the spacer between the anterior teeth, ask the patient to bite tightly on it, then observe carefully to see whether the mandible is abnormally forced backward into the posterior region and whether the space between the posterior teeth is less than before when observed with-

out muscular force applied. If so, it may be understood that there is an abnormal thrust upward and backward of the condyles showing joint impairment. If the discrepancy between the posterior teeth were restored to normal or occlusion were balanced by restoration, as may be required, the teeth would act as "jacks" to prevent the upward and backward condyle thrust, and hence, protect the injured joints from the impaction of the condyles against the tympanic plate and superior surface of the fossae.

**Observations and Treatment in Specific Classifications**—Cases of Severe Abrasion, Loss of Vertical Dimension, or Deep Underbite: If the case is one of severe abrasion and loss of vertical dimension or deep underbite, the space is increased in dimension by the amount of abrasion or other deformity added to the dimension of the rest zone; for example, observe that in a normal case without abrasion the rest position might be 4 mm. Suppose, then, with the same position maintained, the upper and lower teeth are suddenly reduced in length by 2 mm.—2 mm. from the upper, plus the 4 mm. of the rest zone plus the 2 mm. from the lower respectively totals 8 mm. Presumably, in such a case, the restoration of 2 mm. to the upper and 2 mm. to the lower reduces the distance again to the normal 4 mm. or neutral zone.

It will also be noticed if observed carefully in a case of this kind (severe underbite, abrasion and edentulous cases) that as the mandible leaves the upper limits of the neutral zone, it snaps upward quickly as if suddenly released into space. (For example, a patient with an edentulous upper jaw and with lower anteriors remaining will frequently, while swallowing, inadvertently snap the lower teeth against the upper ridge hard enough to injure it.)

\*This series of four installments was begun last February and continued in the March and April issues. Reference to the colored chart showing the anatomy of the temporomandibular joint which accompanied the February installment will prove helpful.

**Cases of Unbalanced Occlusion and Muscular Unbalance:** In order to determine unbalanced occlusion and muscular unbalance, which are so frequently found in cases that seem to be normal, place the small end of the tapered spacer with its flat side against an inclined plane of the upper cuspid while the mandible is at rest.

Have the patient move the mandible upward barely to touch it, which provides minimum contact and then observe the occlusion on both sides. Have the patient bite tightly and again observe it on both sides. Repeat this performance on each upper tooth on that side, then on the other side. By this method, cases of unilateral unbalance and dysfunction may be detected. If the teeth on the right side, for example, make contact while the left side is being spaced with the tapered orangewood stick (and when the test is reversed) the teeth on the left side remain spaced while conducting the test on the right side. It is evident that the type is unilateral and that the left joint is not functioning normally; that the joint structures are loosened, the fossa excavated perhaps to some degree and that there is a shift in directional muscular force owing to muscular unbalance. The muscles on the left side continue to contract after those of the right side have been stopped by occlusal contact.

Reconstruction with inlays, partial dentures or whatever restoration may be required to reestablish occlusal balance and muscular balance on the left side will reestablish normal joint function. It has been demonstrated that the injured structures of the joint will regenerate and heal after correction is made.

**Cases of Bilateral or "Wobbly" Jaw:** Similarly, the bilateral or "wobbly jaw" type is observed. If each side makes occlusal contact while the opposite one is being spaced, it is evident that joint deformity exists bilaterally. These cases usually require a great increase in vertical dimension to correct them, whether dentulous or edentulous, by increasing the balanced tension of the muscles and "jacking up" of the temporomandibular joints. By this correction, the jaw is repositioned downward and forward.

In chronic and severe cases of joint destruction and those manifesting trismus of the muscles, functional loss

of some muscles and pseudo-ankylosis, it is frequently advisable to employ the use of splints for treatment before attempting a corrective reconstruction. The placement of splints will permit healing of the joints usually without further injury during the period they are worn. When the mandible is splintered to an exaggerated degree in such cases, it permits the muscles affected by trismus and loss of function to regain their function. In some cases as much as two years is required to accomplish these results—depending on the individual case.

**Joint Destruction in Accident Cases**—Occlusal splints are frequently used to advantage in treatment of accident cases in which a joint or joints have been injured. A patient who had fallen on the ice, striking his chin on a step, suffered painful injury to the left joint. A splint was applied and when removed after six weeks, recovery was complete without need of further treatment.

**Open-Bite Cases**—The open-bite classification of cases as referred to in Figs. 8 and 9 in the March issue of *THE DENTAL DIGEST* presents a different problem for correction of abnormal mandibular position with respect to the temporomandibular joint.

The open-bite case is one of malocclusion in which the molars occupy most of the space of the neutral rest zone. In many cases the molars even extend into the functional region above the upper limits. The other teeth and the mandible are abnormally positioned at or below the lower limits of the neutral rest zone in a functional region; hence, the neutral rest zone is unavailable for mandibular rest, because the mandible cannot enter it. The mandible remains in function continuously in the region beyond the upper limits of the zone by molar contact and beyond the lower limits, because the malposition of the molars act as "jacks to prevent the mandible from entering the rest zone as it attempts to while moving upward.

The patient, in order to separate molar contact, must by conscious effort open the mouth farther which increases the degree of function. While swallowing, muscular action which is usually unbalanced, only tightens the contact of the already contacted molars and increases their fulcrum action. Thus, there is no period of simultaneous rest between the

action of the abductor muscles, moving the mandible downward and forward, and that of the muscles of closure.

The condyles are abnormally positioned forward and downward in continuous contact with the anterior third of the articular eminence, and often are in contact with the crest of the articular eminence. The condyles cannot function on the middle third of the articular eminence as they should, because the mandible cannot move backward and upward to permit it; nor can they locate themselves in their neutral rest zone situated approximately under the middle third of the articular eminence.

The fulcrum action of the malpositioned molars creates abnormal mandibular movement, which, in turn, causes erosion and flattening of the condyle and articular eminence, stretches and loosens joint ligaments and capsule, and establishes an abnormal condyle path. This abnormal condyle path jumps across from the crest of the articular eminence downward and backward to the lower part of the tympanic plate, thus eroding it also.

Frequently in the chronic case of this type, it is observed that the mandible has assumed a downward and forward position as a result of subluxation of the joints.

These cases may be corrected by grinding the occlusal surfaces of the upper and lower molars, particularly the lowers, enough to restore the neutral rest zone and balance any discrepancy of occlusion by restorations with inlays. Even extraction of an offending molar may be necessary, accompanied by grinding the others to allow the mandible to move upward enough to restore the zone.

**Trismus or Pseudo-Ankylosis Cases**—In trismus or pseudo-ankylosis cases shortened vertical dimension is usually evident on the affected side. The placement of splints with the occlusal portion built up vertically to an exaggerated degree and allowed to remain for approximately a period of ten months will stretch the muscle fibers enough to restore them to normal balanced function when the splints are removed. During this interval the joint structures also have the opportunity to regenerate. All that remains is to restore the occlusal surface of the upper and lower teeth on that side to balanced occlusion with the other side.



### Technique for Splint Construction

1. Soft wax is placed on the occlusal surfaces of the upper posterior teeth.

2. The spacer is placed at a previously selected location, let us say, the distal inclined plane of the cuspid. Then the patient is asked to close lightly just to touch. If the case is a unilateral one, the teeth on the unaffected side will occlude and those on the affected side will remain spaced. This procedure will register the discrepancy in the soft wax.

3. The soft wax is then chilled and removed and used as a "bite registration" for mounting the casts on an articulator.

4. The casts are mounted and the wax bite is removed. The space on the affected side is as it was determined in the mouth.

5. Wax for the pattern is then adapted to the lubricated lower cast and the articulator is closed into its softened surface.

6. The pattern is then carved with a shallow occlusal surface, so that the upper cusps do not articulate too deeply into the wax and the pattern is trimmed neatly.

7. Removed from the cast, the

spacer is again used to maintain jaw position while the wax pattern for the splint is finally adapted and checked for the newly established and corrected centric occlusion directly in the mouth. The patient is not permitted to register functional movement on the wax pattern.

8. The pattern is removed, sprued, and invested.

9. The wax is burned out at 700° for 30 minutes and the mold is allowed to cool until it can be held in the hand.

10. The mold is cast with a low-fusing metal (acolite) which must not be overheated.

11. The cast is chilled and removed from the investment when it is easily polished.

12. The casting is placed in the mouth and the centric occlusion checked.

13. With the aid of carbon paper markings, the occlusal surface is ground so as to establish balanced functional occlusion in conformity to the repositioned mandibular movement.

14. With this completed, the splint is set with dental cement and the patient is requested to chew carborundum paste for three minutes to complete the "milling-in."

When a splint is removed that was placed as a corrective treatment, let us say, in a unilateral type case, and has remained over a period sufficiently long to permit healing of the joint structures, its effectiveness is evident. The splint, by supplying the loss of vertical dimension on the affected side where there was occlusal unbalance, corrects the muscular unbalance that existed to a normal muscular balance. It will be noticed that the healed joint structures will now sustain the weight of the mandible and that there is a space between the teeth on the injured side which represents the degree of unbalance and the amount of vertical shortening that existed. It is only necessary now to restore the lost vertical dimension (to fill the discrepancy) of that side to complete the correction.

By cutting the splint in half anteroposteriorly, it will serve during restorative procedure as a guide while patterns are being made, and the parts of it may be replaced to sustain the jaw and prevent discomfort to the patient between appointments until the splint can be replaced by the final setting of the restorations.

3720 Washington Boulevard.

## Factors in the Action of Drugs of Interest to the Dentist: An Abstract

FREDERIC C. MAYER, PH. C., B.S. The Journal of the American Dental Association, 28:742 (May) 1941.

The pharmacologist is interested in the influence of a drug itself, independently of its utilization. The physician and the dentist are interested in its therapeutic action.

**Size and Weight**—Average doses of medicine are based on the assumption that the average adult weight is 150 pounds. There is a rule of dosage per weight but there are so many variables that it is not always easy to apply. In the case of potent drugs in the unusual cases in which the dentist may have to apply this rule, it is

$$\text{adult dose} \times \frac{\text{weight}}{150}$$

**Age**—In prescribing for children in conditions such as postoperative pain or premedication for anesthesia, the

dentist may write his prescription by applying Young's rule:

Age

age plus 12

which will give the fraction of the adult dose that should be administered. In old age likewise the dose is, as a rule, somewhat less. Especially narcotics and depressant drugs should be administered with caution to the aged.

**Sex**—Women, chiefly because of their smaller size and also because of their greater sensitiveness, usually require smaller doses than men. Nervousness, pregnancy, menstruation and lactation—these will modify the kind and amount of dosage.

**Temperament, Race, Occupation, Habits of Life and Climate**—Persons

of highly neurotic temperament, the more excitable races, sedentary workers, and those who live a life of indolence tending to softness and sensitivity to disturbances react more readily to drugs than do those of phlegmatic nature, the more stolid races, or out-of-door workers who become inured to disturbing influences.

**Cumulative Effect of Drugs**—Certain drugs owing to some irregularity of absorption may accumulate in the body until the drug is absorbed rapidly at one time with the effect of an added or accumulated amount instead of the separate therapeutic doses. This is not to be confused with chronic effects as in occupational

(Continued on page 238)

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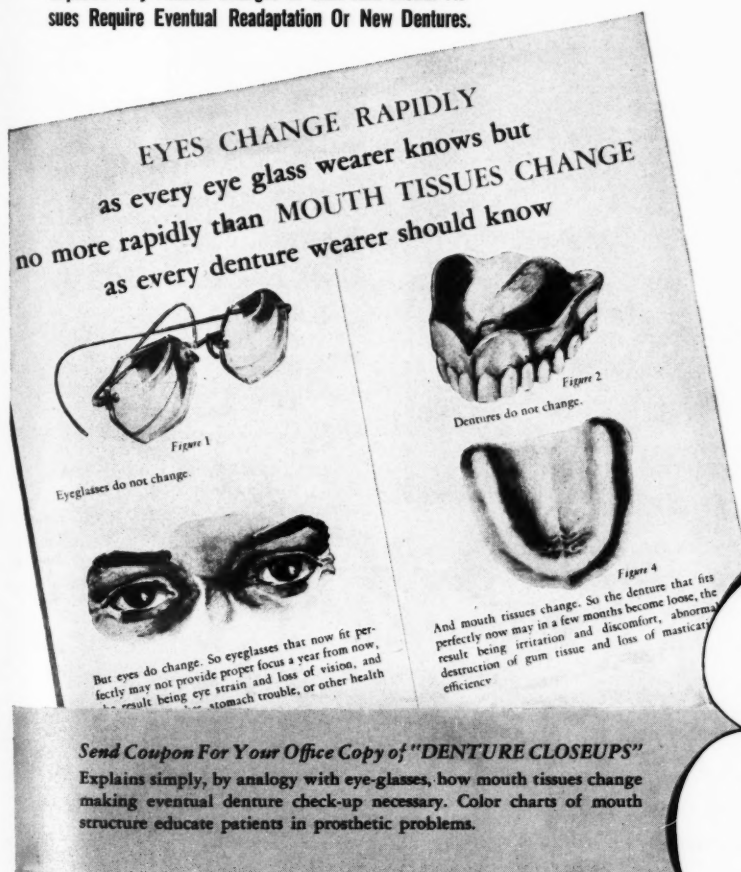
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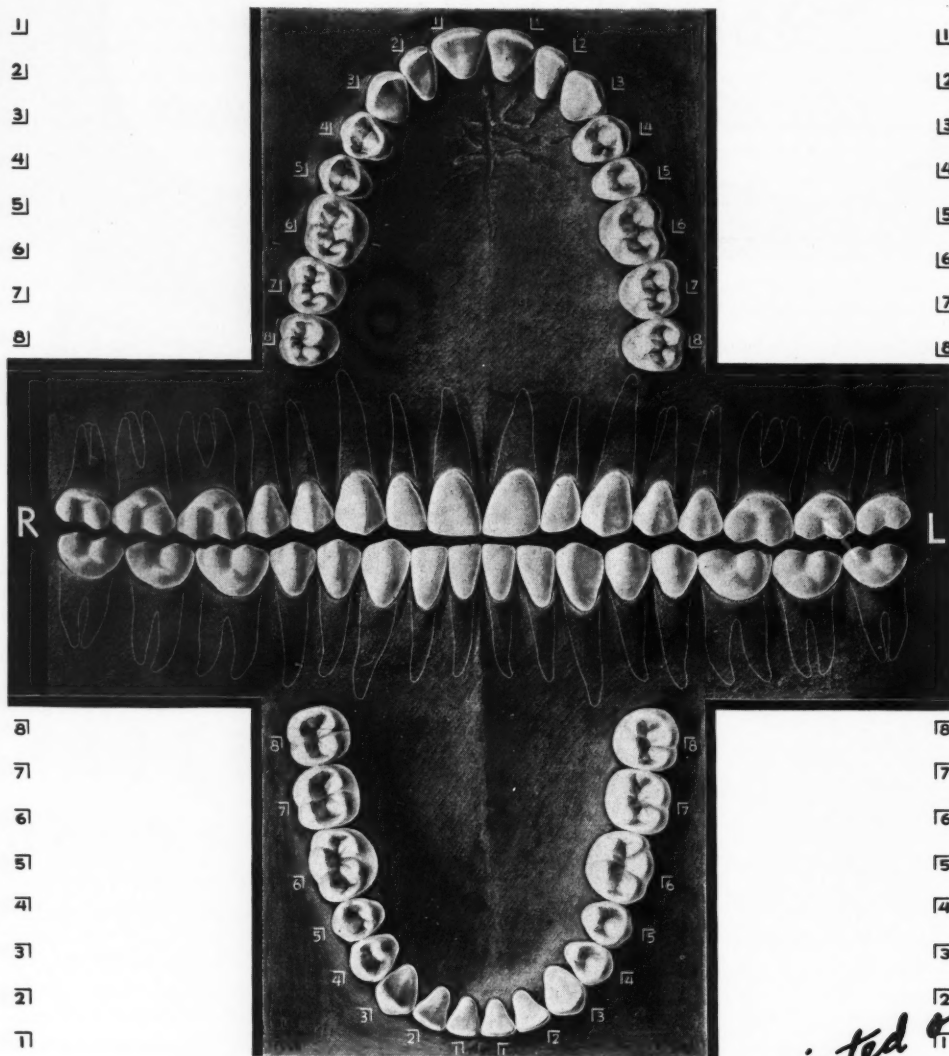
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# THE RYAN EXAMINATION AND TREATMENT RECORD

Designed by Edward J. Ryan, D.D.S.  
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CLINICAL NOTES

*Specimen of chart which is printed on  
white, durable paper of the right texture  
for crayons or colored pencils*



# Suggestions for the use of

## The Ryan Examination and Treatment Record

•  
**OVER  
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CHARTS  
NOW IN USE  
BY DENTISTS  
EVERYWHERE**  
•

### TYPES OF PENCILS

Yellow.....	Mongol No. 867
Gray.....	Mongol No. 819
Red.....	Mongol No. 866
Blue.....	Mongol No. 865
Yellow.....	Castell No. 40
Gray.....	Castell No. 57

Mongol pencils are made by Eberhard Faber;  
Castell by A. W. Faber.

### SUGGESTED SYMBOLS

Each dentist may develop his own system of symbols but the following specific markings have been found simple and adequate:

**Soft Lead Pencil**—(a) Porcelain fillings are indicated by a pencil outline.

(b) Porcelain jacket crowns and bridges are shown by cross-hatching with lead pencil across the corresponding tooth or teeth on the chart.

(c) Missing teeth are blocked out with a soft lead pencil.

(d) Abrasions are represented with a soft lead pencil.

**Blue Pencil**—(a) Cavities are indicated with blue pencil.

(b) Advisable restorations are demonstrated with blue pencil.

**Red Pencil**—(a) A red line is used to indicate the presence of a root canal filling.

(b) A red outline shows the presence and position of an impacted tooth.

(c) Red pencil is used to represent pulp involvement.

(d) A red "X" is made across a tooth to indicate that its extraction has been advised.

(e) Pyorrhea pockets are represented in red along the crest of the alveolar ridge (and a notation is made at the bottom of the chart if extensive gingivitis is present).

1. The Ryan Examination and Treatment Record may be had in pads of fifty charts each. These pads fit conveniently in a standard 9½ by 11½ inch loose-leaf notebook which may be purchased at a five-and-ten cent or variety store.

2. Alphabetical dividers may be made by using a ten cent package of plain white paper of the same size as the charts with holes punched at the same distances, and a fifteen cent box of alphabetical index tabs. The holes are reinforced.

3. It is a good plan to keep a blank sheet of paper between the charts to prevent possible smearing of crayon or pencil markings; but this is not essential.

4. A fresh pad of charts may be kept ready for use in back of the notebook of active records.

5. The various types of restorations and their location in a particular mouth are shown with the use of polychrome pencils—gray, for amalgam; deep yellow, for gold. White pencil does not show up very well; consequently, porcelain may be indicated with soft lead pencil outlines or cross-hatching.

6. Spaces provided beside the quadrants with numbers corresponding to the teeth permit special notations concerning each tooth. As treatment progresses the blue markings indicating needed dentistry are erased, and the nature, location, and date of placement of each new restoration are recorded. Additional clinical notations are made if necessary in the space provided for that purpose below the chart itself.

7. It is essential to be consistent in any system of symbols or markings developed. To insure consistency, it is well to have a key page in the front of the notebook.

8. The exact record of conditions found in the average patient's mouth at the original examination can be completed in fifteen or twenty minutes, and the time it takes to keep a chart up to date is negligible.

9. When a chart is completed the necessary data (name, address, telephone, reference, estimate, and terms) are typewritten in the spaces provided at the top of the record. The date of the original examination is also recorded in order that the treatment dates (as shown in the quadrants at the sides of the chart) will be recognized as subsequent to the date of the original examination.

10. Provision is made on the back of the chart for bookkeeping records. This is merely for the convenience of dentists who wish to keep all records together, but may be ignored by dentists who have a satisfactory book-examination and Treatment Record may be employed as an additional or keeping system which they need not discard or do not wish to discard. The Ryan Examination and Treatment Record may be employed as an additional or supplementary record to any established method of record-keeping dentists may have.

11. Although the Ryan Examination and Treatment Record was designed for the dentist's own convenience in his practice, the charts have been found to have a definite informative value in explaining conditions to patients. The charts are also particularly helpful in reporting dental conditions of patients to cooperating physicians.

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## NOTES ON THE

# Cuff

### "Helluva Good Time"

#### Cause of Caries . . .

Most of the dental health articles appearing in magazines of general circulation have been directed to women readers. Seldom have men been singled out to receive health information except about those few diseases that are entirely masculine. "The Magazine for Men," *Esquire*, in its May issue has a splendid article **SAVING YOUR FACE**, written by an outstanding American dentist, Fred D. Miller, of Altoona, Pennsylvania.

In this article the point is emphasized that kids on their own, free from parental influences and properly balanced family diets, are increasingly susceptible to tooth decay. Every dentist knows that one of the prices paid by young people who go to college is rampant tooth decay. So far as I know, though, Fred Miller is the first dentist to call attention publicly to this common clinical occurrence. Anyone who has been around adolescents knows that they need a real iron-fisted dictator when it comes to food selections. If they had their own way, they would live on hot dogs, sweet and soft drinks and candy bars. At this age of growth their demands for energy-producing foods are probably highest and sugar is probably the answer to that inner urge. During this and other epochs in their lives, there should be proper nutritional reinforcements in the form of minerals and vitamins. Young folks aren't concerned very much with health. In their vibrant youth, they usually have health in a full degree and accept it as their natural right. They are pretty indifferent to talks on hygiene and are severely resistant to lectures on diet. Fred Miller states the case in these words:

"That is why I keep myself poorer than I need be, trying to educate these young men—young idiots, I call them—who bring me as many as eight spots of decayed enamel after their first

(Continued on page 230)

# Bravest man on the force

*.....but why  
does he fear  
his dentist?*

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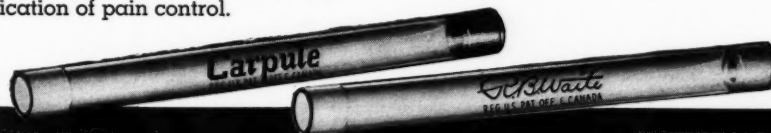
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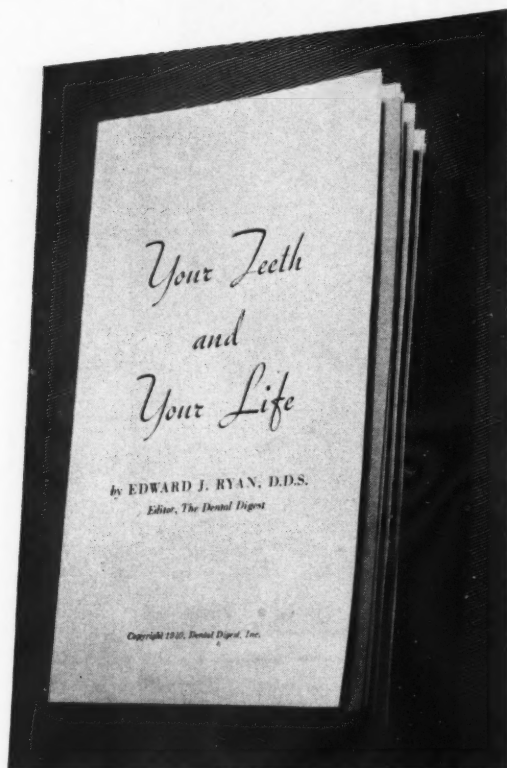
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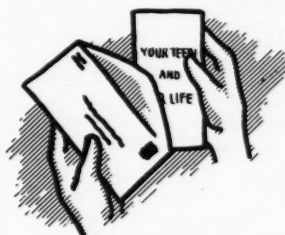
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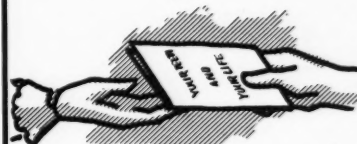
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DEALER .....

(Continued from page 226)

three months in college—men who never needed a half-dozen fillings in all their lives before. Cut loose from home ties for the first time, they are at the mercy of food providers whose first aim is profit from food pleasures rather than physical well-being from food pleasures as in good homes today. They have had for the first time their fill of white-roll hamburgers and hot dogs, of hard candies (tooth destroyers, I call them), chocolate bars, sodas and sundaes—also of headaches and aspirins, constipation and laxatives. They say so quite frankly and think they've had one 'helluva' good time. And it all puts money in my pocket—but . . .

"In a few years it's going to put money in some physician's pocket, too, and discomforts to their own bodies from which they won't find one 'helluva' good time, either. For even if Nature is wonderful, She isn't wonderful enough to protect the more delicate tissues and organs of the body from the kind of dietary abuses that eat holes in tooth enamel. Tooth decay is a sign of illness! Every time a decayed tooth appears and keeps on decaying, it is Nature's signal that a disease-breeding condition has been created and is continuing in the body."

Fred Miller is trying to stir up the interest of fathers and potential fathers in a rôle they might assume to protect their children's teeth. I can just hear some old man giving his son or daughter last minute pre-college instruction! I know kids of this age pretty well and I am afraid the old man will be looked at as something of a fuss-budget or fogley. That doesn't mean that I, too, wouldn't like to think that every youngster going away to college would take this advice with him and put it to work: "No refined or processed cereals. No candy. Buy orange or tomato juice when you find yourself at a soda fountain. Keep fruit in your room. Lots of milk and vegetables and fruit. Even with dormitory food, that will keep you safe."

### The Mailman Brings . . .

A letter from a Wisconsin dentist, worth quoting in full:

"The young physician who practiced in the office above us, has left for a year in the army. His office was vacant about a month after he had gone, and we thought it was quiet,



nobody going up there any more. But we didn't have to wait long for a new situation:

"Last week there was some unusually loud child-screaming coming out of this building. From the large front window of this office, I could see people glancing toward my location, but when they observed that I was not occupied at the moment, they seemed to feel assured that the echoes of torture must be coming from other quarters. By this time, I also became curious: "The upper floor had been rented to a beauty shop—one of those hair-bending outfits. Well, a woman from out in the country decided that her five-year old daughter (yes, 5) should have a permanent wave. And she was getting it despite vociferous objections.

"There are two points to this story: The juvenile recipient of the permanent wave probably needed dental treatment a great deal more than tonorial adjustment; the element of beauty should be stressed more and more if we wish to win a certain portion of a potential practice."

And a letter from E. F. Sullivan of Rockford, Illinois:

"Recent experience on a draft board has opened my eyes to how the other half (or is it three-fourths?) lives. I haven't seen these wrecked mouths in my practice and neither have you. The patients we see are making some effort to preserve their teeth and yet here is a vast body of young men with mouth conditions that one can scarcely believe; probably not 10 per cent of them have ever sought the services of a dentist except for extraction, although they do not show the lack of other than dental needs. The last ten years may be partly responsible but the American people have a way of getting what they really want.

"It would cost a small fortune to supply the bridges and partials most of these men require, and needless to say, most of them are not going to have it done. They will not only come to full dentures early but are resigned to it and have been since childhood.

"It is from such cases that the demand for socialized dentistry comes; also the headaches from quack laboratories and quack dentists quarreling over the rich spoils of dentures to be made for these poor devils.

"We have been listening for a number of years to a barrage of economics,



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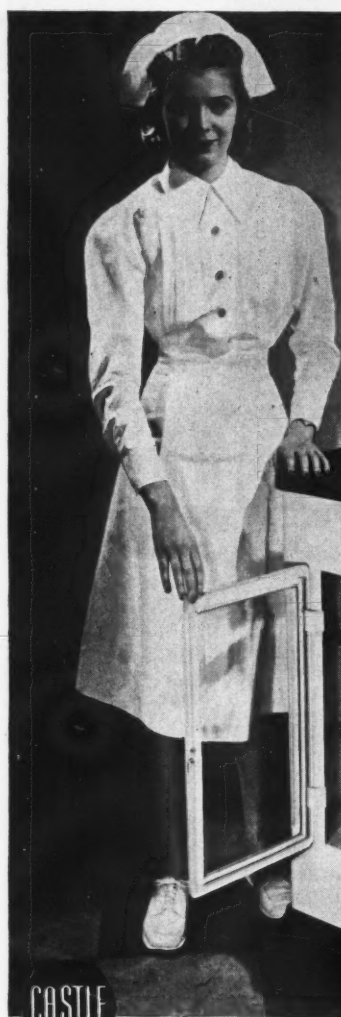
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some of it commonsense, much of it charlatanry<sup>1</sup>, to borrow your own word. And there has been much talk that Dentistry must do something about some vague problem. To my knowledge nothing has been done.

"We can all agree, I believe, that the economic problem for the dentist would solve itself if each one of us had more patients than we could conveniently care for. We can also agree, I believe, that if the people who need our services could be convinced that such services were a necessity rather than a luxury rating far below cars, movies, etc., there are not enough dentists to care for all the patients we would have.

"We all have in our practices people who consider the health of their mouths second only to food for their families, and they so consider it because they have been trained to think that from childhood, and these people are the backbone of our income in good and bad times, particularly in bad times. How can we increase the number of people who consider dentistry in this way? Perhaps by having every school child taken care of at public expense and making the care obligatory. Most recent dental graduates would welcome an honorable way of adding even a small amount to their incomes the first few years. It could be made a required internship if necessary, and in a few years, we could have innumerable new patients who had been trained to value their teeth.

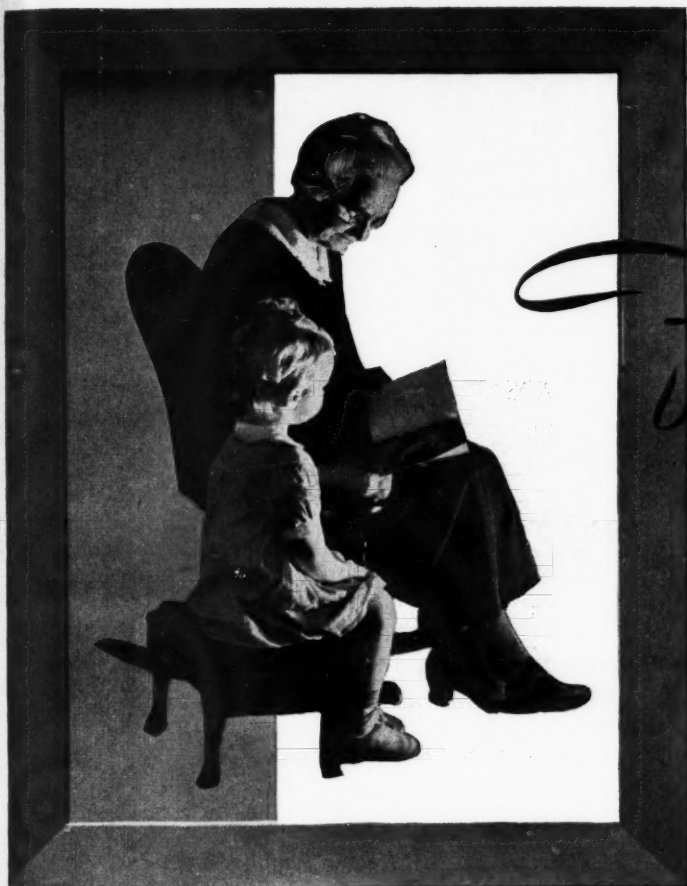
"Resistance to this plan would arise from two classes in the dental field: First, the short-sighted men who would see a loss of income in the loss of the children from private practice. To them, I would recommend the reading of *ACHIEVEMENTS AND RESULTS IN WEST VIRGINIA OF THE JENKINS JONES DENTAL DISPENSARY AND McDOWELL COMPANY DENTAL CLINICS* which is obtainable from the American Dental Association. The second group would not want to lose the denture business and there is nothing to be done about them.

"If this idea is socialism, I am cheerfully guilty, but it seems like selfish commonsense to me."

### Military Dentistry . . .

There is now available to the den-

<sup>1</sup>Ryan, E. J.: Success Formulas, in Notes on the Cuff, DENTAL DIGEST, 47:136 (March) 1941.



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**EACH** item in this group of Squibb Products is useful in dental practice. Some have a place in your office practice, others are intended for the home use of patients—under your supervision.

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**Squibb Dental Cream**—A safe, refreshing dentifrice containing concentrated Squibb Milk of Magnesia. Designed for the home care of the teeth and free from any ingredient harmful to the teeth or gums. Its cool minty taste makes enjoyable the daily routine brushing of the teeth.

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**Squibb Angle Toothbrush**—The small brush head, mounted on a slim metal shank, is bent at an angle like your mouth

mirror, designed to make it easier to reach less accessible areas of the teeth. Adaptable to all brushing techniques.

**Squibb Oral Perborate**—Essentially sodium perborate, free-flowing and pleasantly flavored. May be used on the toothbrush or in solution as a mouth wash, when indicated.

**Squibb Dental Lotion**—A mildly astringent, refreshing anise-flavored mouth wash for routine use.

**Squibb Antiseptic Solution**—An effective and useful agent in oral hygiene. May be used as a gargle or spray in helping to relieve mouth and throat irritations.

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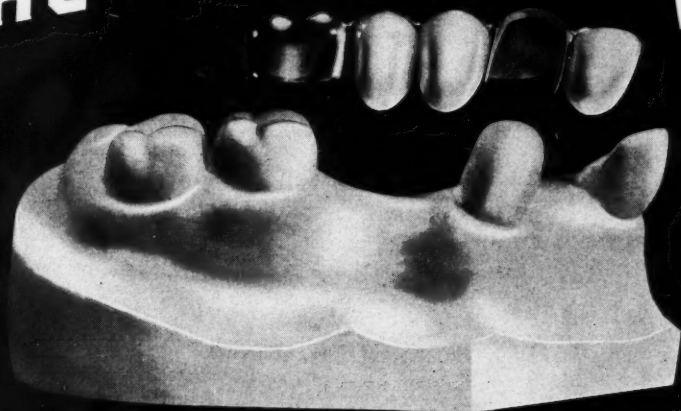
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tists of the country the excellent publication, **LECTURES ON MILITARY DENTISTRY**, prepared by the Dental Preparedness Committee of the American Dental Association with the collaboration of the Surgeon General of the United States Army. The book of 104 pages with eighty-two illustrations is made up of lectures on military dentistry, presented by dental officers of the Army. The book sells for seventy-five cents cash and should be ordered direct from the American Dental Association, 212 East Superior Street, Chicago.

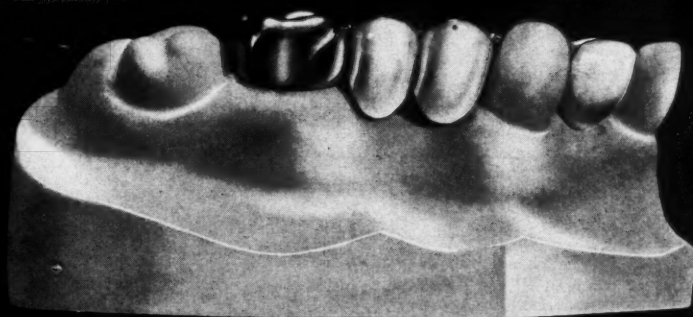
Entirely outside the excellent material that is presented on the surgical aspects of jaw casualties and other emergency conditions of war, this book is a document that might be placed very properly in the hands of every warmonger. We mean by that that few people realize what horrible mutilating wounds are inflicted by modern projectiles in present-day warfare—the faces that are destroyed, the bodies that are broken by modern weapons should be marched in review before some of the hysterical people in our nation who are crying for immediate intervention in the European war. The book **LECTURES ON MILITARY DENTISTRY** was certainly not prepared with any idea of being anti-war propaganda. It is an objective, scientific publication that looks the facts of war squarely in the face and these facts include shattered faces and torn bodies. This is a book that indicates how dentists are to aid in the treatment of these seriously wounded people both on the battlefield and behind the lines. The thread runs through this entire publication that the rôle of the dentist in military duty is much more than the practice of dentistry. He is an auxiliary medical officer and must be prepared to treat hemorrhage, shock and the other casualties of the battlefield.

God grant that the members of our profession in this country will never be called upon to administer to their fellow citizens of this nation on battlefields in our own land or elsewhere. But it is comforting to know that we are being prepared. This recent publication on military dentistry, gruesome as it is by implication, is an example of the realism that is coming to our lives, that we are facing the grim possibilities of warfare and are making ourselves ready.—E. J. R.

# DO IT THE TRUPONTIC WAY!



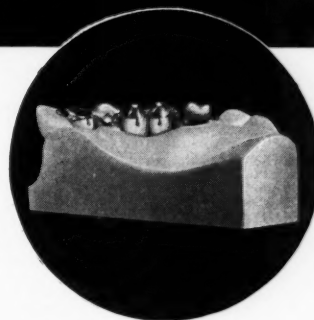
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## Factors in the Action of Drugs of Interest to the Dentist:

### An Abstract

(Continued from page 222)  
poisoning in which the effect is gradual and progressive.

**Rapidity of Absorption of Drugs**—Absorption and the rapidity of drug action are often greatly influenced by solubility. A drug must be soluble to be absorbed but the solubility in the body fluids is not the same as in water or a solvent in a test tube. The time of administration, whether taken on an empty stomach or after a meal also affects the rapidity of absorption.

**Time and Method of Administration of Drugs**—From a knowledge of the time and method of administration of remedies, information is gained as to the rate at which these remedies are absorbed and the influence which they exert on the tissues with which they come in contact during their entrance into the body. The most general method of administration of medicines by the dentist is by mouth and by hypodermic injection. Drugs administered hypodermically are absorbed in about half the time required for absorption from the stomach and usually the hypodermic dose may be estimated as about one-fourth less than the stomach dose. The difference arises from more rapid absorption and from the fact that when administered by mouth the drug may be altered or destroyed somewhat by the digestive fluids.

The hypodermic method of administering medicines should be used by the dentist only when he is absolutely sure of his method of administration and of the nature of the drug, and then under absolutely aseptic conditions.

Drugs administered by inhalation are employed to affect the respiratory tract alone, except in the case of general anesthetics.

**Elective Affinity of Drugs**—Most drugs have an elective affinity for certain definite tissues. A drug applied locally may act differently from one administered internally or injected into the blood.

**Synergistic Action of Drugs**—When one drug reinforces the action of another drug, they are said to be synergistic. In the case of analgesics, for example, such as acetophenetidin, aminopyrine, or acetylsalicylic acid, two of these may act more effectively

than one. On the other hand, a drug may fail to produce desired symptoms if an antagonistic substance is present in the body.

**Influence of Previous or Chronic Ailments on Drug Action**—Previous or chronic ailments and impairments resulting from the ailments may modify the action of certain drugs, may make it dangerous to administer such drugs, or may necessitate a great reduction in dosage.

**Hypersensitiveness to or Intolerance of Certain Drugs**—Allergy or intolerance, as used in medicine, is a general term for all conditions of ab-

normal tissue sensitivity to (1) agents that normally cause a limited or standard reaction, such as drugs or bacteria, and (2) agents that are ordinarily innocuous, such as foods or pollens. The tissues suffering shock in drug eruption are located primarily in the skin. Oral manifestations of allergy are usually hives or canker sores. Allergic reactions have followed the administration of the following drugs: acetylsalicylic acid, procaine, bromides, iodides, quinine, salicylates, opium, strychnine, caffeine, arsenic, mercurials, bismuth, sulfone hypnotics, barbiturates, and



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As with fine paintings, it is difficult to "speculate" the precise value of fine restorations. That they are made of gold hints at just a fraction of their worth. Its use



phenolphthalein. Ingestion of vitamins, glandular substances, calcium, ergosterol and cod liver oil may have similar allergic reactions, and the dentist should, therefore, exercise constant vigilance when prescribing these products.

**Drug Tolerance**—Drug tolerance is marked by an uncommon or extraordinary degree of resistance to the influence of medicaments and poisons in general or to that of particular agents. There are two forms: original and acquired. Tolerance is not to be confused with immunity.

**Drug Addiction**—Drug habit or ad-

diction is acquired tolerance and something more. It is a morbid craving that results from the habitual use or abuse of certain drugs, chiefly stimulants, narcotics, analgesics and hypnotics. The condition becomes in time not merely one of tolerance to the drug but of tolerance existing side by side with chronic intoxication from the deleterious influences of the doses on the various tissues and functions.

**Comment**—Instead of using fixed doses of medicines of a proprietary nature, the dentist should meet the unusual conditions by availing himself more often of his privilege of

writing prescriptions for the treatment of the diseases of the soft tissues of the oral cavity.

## DENTAL MEETING

# Dates

Georgia State Dental Association, seventy-third annual meeting, Hotel DeSoto, Savannah, May 19-21.

Ontario Dental Association, seventy-fourth annual meeting, Royal York Hotel, Toronto, May 19-21.

Alumni Society of the Philadelphia Dental College, seventy-eighth annual meeting, Temple University School of Dentistry, Philadelphia, May 21.

The Alumni Society of the Philadelphia Dental School, seventy-eighth annual session, Temple University School of Dentistry, May 21-22.

Western Reserve Dental Alumni Association, annual meeting, School of Dentistry, Cleveland, June 9.

Pennsylvania State Dental Society, seventy-third annual meeting, Bedford Springs Hotel, Bedford, June 3-5.

Association of French Speaking Dentists of North America, annual meeting, Chateau Frontenac Hotel, Quebec, Canada, June 5-7.

South Dakota State Dental Society, fifty-ninth annual meeting, Alex Johnson Hotel, Rapid City, June 15-17.

Mississippi State Dental Association, annual meeting, Buena Vista Hotel, Biloxi, June 9-11.

Northeastern Dental Society, twenty-seventh annual convention, New Ocean House, Swampscott, Massachusetts, June 8-11.

restorations . . .



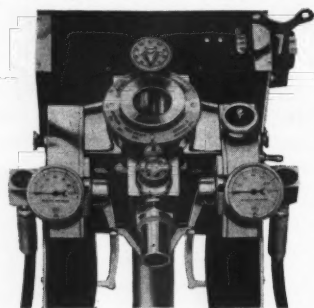
is a sign of finer dentistry, yet the use of gold restorations is reasonable to an extreme . . . a scant payment for each year of comfort and useful service to the patient.

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Utah State Dental Association, fifty-first annual meeting, Salt Lake City, June 26-28.

Montreal Dental Club, seventeenth annual fall clinic, Mount Royal Hotel, Montreal, September 24-26.

Odontological Society of Western Pennsylvania, annual meeting, William Penn Hotel, Pittsburgh, November 11-13.

Mississippi State Board of Dental Examiners, regular meeting, Jackson, June 17. For information write to Doctor G. L. Clement, Pontotoc, Mississippi.

Virginia State Board of Dental Examiners, regular meeting, Medical College of Virginia, Richmond, June 10. For information write to Doctor John M. Hughes, 715 Medical Arts Building, Richmond.

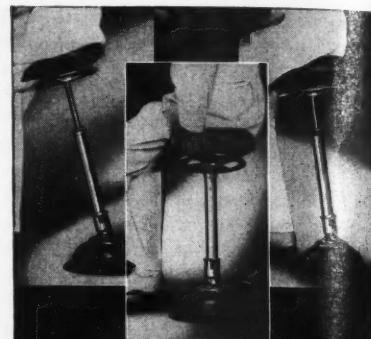
Florida State Board of Dental Examiners, regular meeting, Jacksonville, June 23-27. Applications must be filed by April 23. For information write to Doctor H. B. Pattishall, 351 St. James Building, Jacksonville.

Ohio State Board of Dental Examiners, regular meeting, Ohio State University, College of Dentistry, the week of June 23. For information write to Doctor M. H. Jones, 1553½ North Fourth Street, Columbus.

California State Board of Dental Examiners, regular meeting, Physicians & Surgeons College of Dentistry, San Francisco, week of May 19. Also in Los Angeles at the University of Southern California, week of June 16. For information write to Doctor K. I. Nesbitt, 515 Van Ness Avenue, San Francisco.

Mississippi State Board of Dental Examiners, regular meeting, Jackson, June 17. For information write to Doctor G. L. Clement, Pontotoc.

Maine State Board of Dental Examiners, regular meeting, State House, Augusta, June 23-25. For information write to Doctor C. W. Maxwell, 31 Central Street, Bangor.



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